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FOOD INDUSTRIES

FEBRUARY 1939

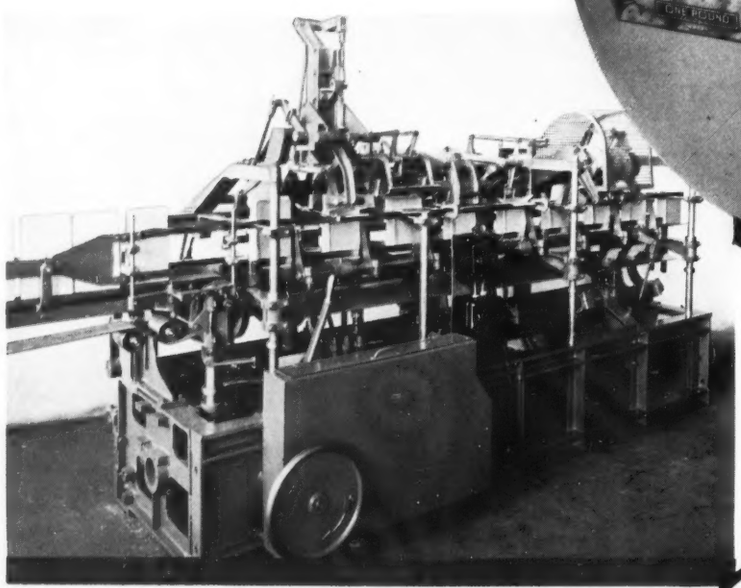
HOMES OF FAMOUS FOODS...SMITHFIELD HAMS, V. W. JOYNER CO., SMITHFIELD, VA.

IN THIS ISSUE: New Federal Food Regulations; Manufacture of Milk Sugar

A PACKAGE WITHIN A PACKAGE

TYPICAL of Pneumatic's continuous development of "lower cost per container" ideas is the independent lining closure diagrammed above with a top tucked carton, as used for the RITZ package illustrated at right.

ECONOMY FLAPS can be used if carton is glue seal closed as on three cartons pictured. Shortened flaps save on cardboard and reduce package cost. Ask your carton supplier!



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FOOD INDUSTRIES

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★ *Homes of Famous Foods*

Everyone has tasted Smithfield ham, but few have seen the quaint, old-fashioned plant of V. W. Joyner & Co., in Smithfield, Va., shown on FOOD INDUSTRIES cover this month, one of the plants where this internationally known delicacy is made.

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McGRAW-HILL PUBLISHING COMPANY, INC.

JAMES H. McGRAW, Founder and Honorary Chairman

Publication Offices: 99-129 North Broadway, Albany, N. Y. *Editorial and Executive Offices:* 330 West 42d Street, New York, N. Y.

Branch Offices: 520 North Michigan Ave., Chicago; 883 Mission St., San Francisco; Aldwych House, Aldwych, London, W. C. 2; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Atlanta, Ga.

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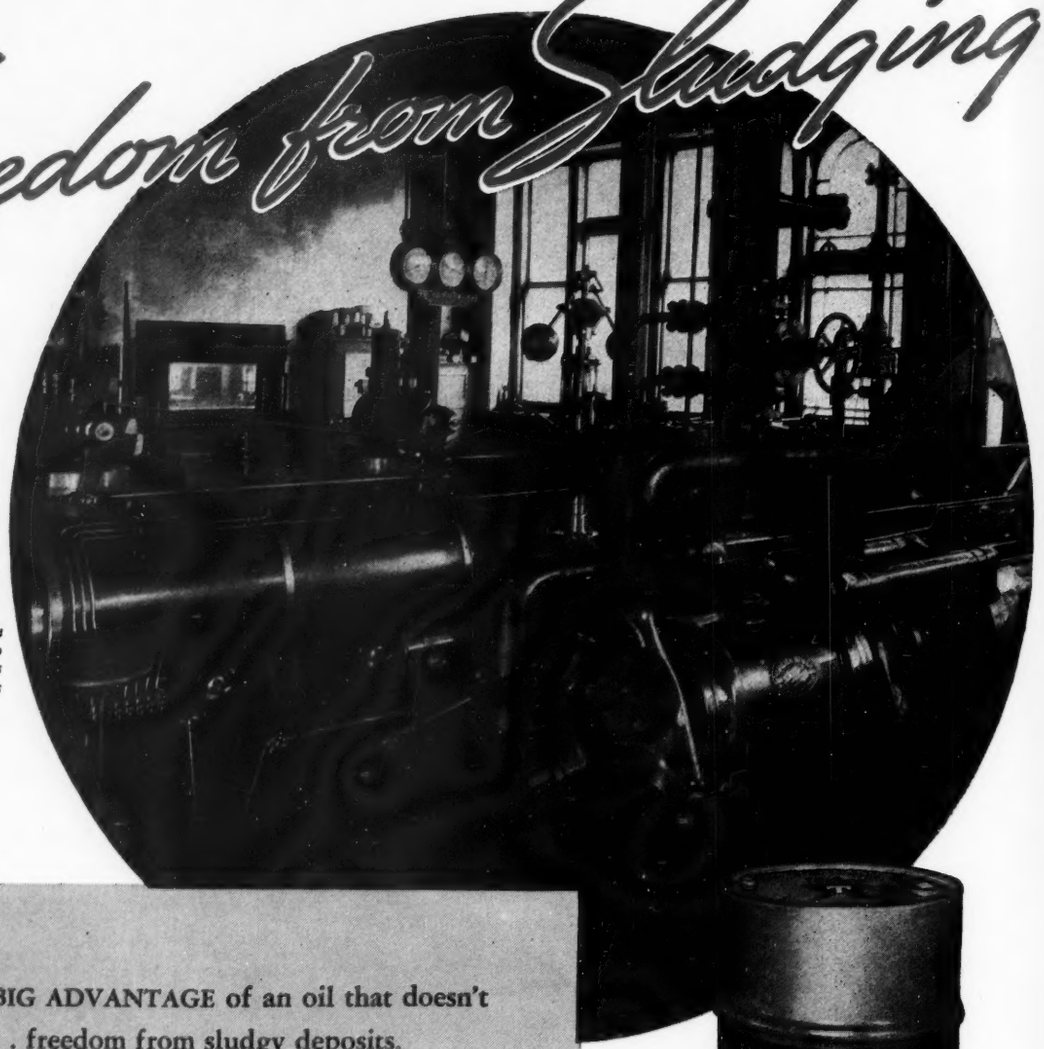
Published monthly; price 35c a copy. Subscription rates: United States, Canada, Mexico and Central and South American countries, $3 a year. All other countries $5 a year or 20 shillings. Entered as second-class matter Aug. 17, 1936, at the Post Office, Albany, N. Y., under the act of March 3, 1879. Cable address: "McGrawhill, New York." Member of A.B.P. Member of A.B.C. Contents indexed monthly in the Industrial Arts Index. Copyright, 1939, by McGraw-Hill Publishing Company, Inc.

Engineers Report

Freedom from Sludging



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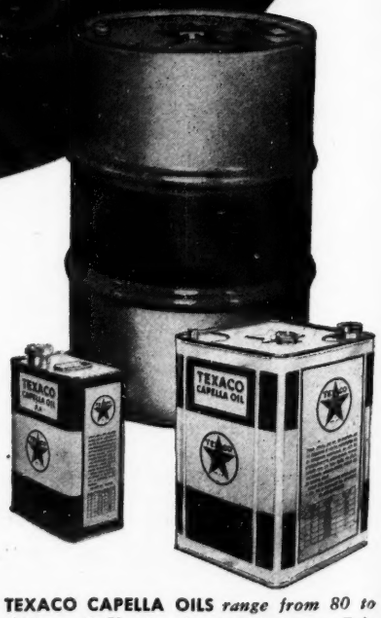

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FOOD INDUSTRIES

DISTRIBUTION • PROCESSING

Established 1928—McGraw-Hill Publishing Company, Inc.

Vol. 11, No. 2

Laurence V. Burton, Editor

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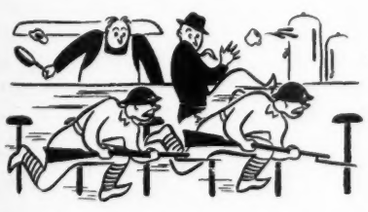
FEBRUARY 1939

The Talk of the Industry

» FOOD SALES at retail in 1938 were down 5 per cent under 1937 when measured by the dollar volume. Total tonnage sold remained about constant. This, according to a recent report of the U. S. Department of Commerce, compares with a loss of dollar volume for all retail business of 11.6 per cent. Automotive sales were down 35 per cent.

We never appreciate the stability of the food business until we look back over a bad year and then decide it was not so bad after all as far as foods were concerned.

» OUR NEIGHBOR, Stewart Ireys, editor of *Current Packaging,* genially twits us about our November suggestion that all food manufacturers give thought to their part in the event of another war. He envisions a dire spectacle: "Even the super-speed of a lunch wagon chef could hardly be expected to cope with the situation with embattled armies charging back and forth through the place."



Dear! Dear!! In all our three times to France with the AEF we never encountered or even dreamed of anything so frightful.

» ANOTHER CONFERENCE on food technology, the second, is planned to take place at Massachusetts Institute of Technology, Cambridge, Mass. The date will be late in June. It promises to be even more worth while than the first which had an attendance of about 600. Better plan to attend.

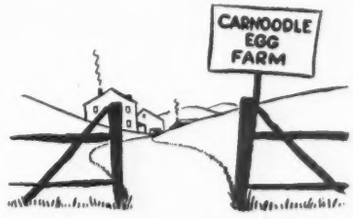
» ON ACCOUNT OF Christmas, New Year's, et cetera, we haven't been able to get around to Harry Hopkins until now. In some ways, despite the raucous protests to the contrary, his training and experience are just grand. All his adult life has been spent in taking care of the poor, first with the Association for Improving the Condition of the Poor; later the Board of Child Welfare; New York Tuberculosis and Health Association; New York State Temporary Relief Administration; TERA, etc.; then head of the WPA. Well, hasn't business been a bit poor of late?

After reading the President's $9,000,000,000 budget message and pondering the $3,000,000,000 national deficit, which FDR so blithely proposes, it begins to look as if the choice of Harry Hopkins for Secretary of Commerce has all the earmarks of a dirty dig.

» BUSINESS sorely needs an able and vigorous Secretary of Commerce. All other phases of American life are well represented in official Washington. There is an ardent advocate for everything except business. If Mr. Hopkins really has the zeal of a Boy Scout and will embark on his new job with the whole-hearted energy he has given to his previous tasks, there is no doubt but that he will be a far better advocate for business than Uncle Dan Roper. And in Assistant-Secretary of Commerce Richard Patterson, Mr. Hopkins has an able right-hand man, and one who knows all official Washington as well as a huge sector of American business by its first name.

If Mr. Hopkins does not make a very creditable showing, it will probably be because the President does not want him to.

» IT'S AG'IN' THE LAW to color noodles artificially, for they might look like egg noodles. On the other hand, egg noodles made from yolks of a pale



yellow color sometimes don't look as if they had much egg in them. But it is also ag'in' the law to color egg noodles artificially—or the egg yolks for that matter.

However, if the hens should accidentally eat carrots or carotene and afterwards lay eggs that had dark yellow—even orange—yolks . . . Well, in fact, Well!!! It looks like the Noodle, Egg, and Carrot Farm had real possibilities. Call it carnoodle for short.

» BIG QUESTION of the month is what will Congress do with Wright Patman's bill to tax chain stores out of

existence. You can find competent opinion to back up any point of view that suits your own self-interest. A. & P. is trying to checkmate Patman by enlisting the support of organized labor. A. F. of L. is all for killing the Patman bill—and, of course, will afterwards move in on A. & P. in a big way.

New Dealers in Washington who are toying with anti-monopoly ideas, on the other hand, are certain the bill will be enacted. But the cynics are equally certain that the *affaire* McKesson & Robbins will kill it.

Important Changes in Washington

SPEAKING OF OFFICIAL WASHINGTON, a most amazing change has taken place—a change that seems to have escaped the attention of the daily press and observers who are permanently stationed at the Capital, because it has taken place so slowly. To an outsider it becomes apparent only after periodic visits separated by half-year intervals. It has been made evident to this department because it is part of our job to get around among the New Dealers at regular intervals to find out what they are thinking about.

For the first time in six years the men from whom spring most of the ideas about better government seem to be thinking pretty much the same sort of thoughts. Five or six years ago it would have been difficult to find a worse state of confused thinking than existed in Washington. Today, a thread of common purpose and objective seems to be running through all minds, even the oldest and most conservative. Moreover, Thurman Arnold, Assistant Attorney General—as far as one can perceive his ideas through the welter of his disjointed utterances in conversation—seems to share in this common philosophy.

When one listens to the ideas of these men, hour after hour in Senate offices, in Administrative offices, at cocktail parties, at dinners, and strolling along the streets, one is convinced of their growing mental stature, their chastened spirit, their earnest thoughtfulness, their sincere desire to perpetuate the American mode of living and democratic ideals, and the disappearance of the disgusting smart-aleck attitude of bureaucrats—so characteristic of the Tugwell days. Only the newest and rawest recruits to high office are conscious of their own importance and superiority over the visiting yokels.

What Washington is Thinking

If one can boil down their composite thinking into a paragraph, it is this: Divide the total production of goods (wealth) in the United States by the total number of people and you have the per capita production of wealth of the nation. Note that this is per capita and not per employee. The alarming fact is that the per capita production of the United States has been steadily declining for about twenty years. In other words, there is progressively less wealth to share per person. The result of this is that everybody is poorer. The principal objective of the government at this time is to find out why this decline exists and how to reverse it. Investigations by the Temporary National Economic Committee (so-called Monopoly Committee), the S.E.C., the Department of Labor, the Department of Justice, The Brookings Institution, and all the other fact-finding agencies point in this direction. And out of it will probably come a moral indictment of short-sighted price policies by management. If managements of business will seek to widen their markets by lowering prices as rapidly as technologic improvements make it possible, it is believed that the increased volume will turn the per capita production curve up again and make for far greater prosperity for all, as measured by real income in goods and service—not necessarily as measured by dollars. Yet that too may come. That, in short, seems to be the state of general thinking in Washington. Admittedly, there are differences of opinion as to how to attain the objective.

Labor's Price Policies Unwise

For the benefit of the skeptics and cynics, let it be said that organized labor's price policies—considered to be as unwise as some of business management's price policies—are due for a

Hors d'Oeuvres

• There is now a Frankfurter on the Supreme Court bench. But he probably won't be put on the grill like the justice of fiery-cross fame.

• *Red potatoes, pink potatoes, blue potatoes, purple potatoes, russet potatoes, yellow potatoes, white potatoes with blue eyes and white potatoes with red eyes. 'Tis neither a nightmare nor DT's. Spuds of these strange hues have been developed by the Pennsylvania Department of Agriculture.*

• Americans spend less on food than 20 years ago, wear fewer clothes, use more automobiles and have more hair waves. Each of which is a step toward better streamlining.

• *House-to-house delivery of milk dates from the Middle Ages. And in those early days the product was absolutely fresh when received by the consumer. The cows were driven from house to house and milked on the spot.*

• Does your dog have discriminating taste? Does he like you? For particular pooches there is on the market an assorted dog food containing four varieties of canine biscuits, each in a separate compartment of an attractive carton.

• *The Federal Food and Drug Administration recently detained at the Port of New York a shipment described as follows: " . . . figs (1 shipment), 48 skeleton cases, wormy." Must have been consigned to National Casket Co.*

• London Cooperative Wholesale Society, famous importer and exporter of fine teas, has discovered that tea tasters have keener palate perception in the clear cool atmosphere of an air-conditioned room. So your product might have that certain something in the cool comfort of your private office and still be slop in the lunch basket of a steel-mill worker.

• *According to one economic study, the farmer receives 67 per cent of the dollar which the consumer spends for pork, more than for eggs, potatoes and oranges, which are sold more or less in their natural state. So in saving everything but the squeal, the packer keeps the farmer and the consumer from squealing. Or does he?*

• It has been claimed that 98 per cent of the milk you drink is digested. The other 2 per cent probably evaporates off your whiskers.

• *In making honey, the bee extracts nectar from the flowers. Then he dehydrates the nectar to reduce its moisture content from 80 to about 17 per cent. And thirdly, he converts the natural sugar of the nectar into levulose and dextrose. Which makes the bee the original, and one of the most proficient, of food technologists.*

• We have from Borden's Columbus branch samples of a monthly leaflet that is hung over the neck of milk bottles. This leaflet contains human-interest items that the housewife can't resist reading, plus one recipe. The fact that the recipe calls for dairy products may be merely a happy coincidence.

F.K.L.

very considerable investigation and exposure to the public gaze—just as the glass industry and automobile industry were recently turned inside out.

Even to a conservative business mind, the foregoing economic thinking seems to make considerable sense. It is to be hoped that purely political forces will not prevent the complete T.N.E.C. investigation that is planned. For, as far as we can see, there is no surer way to escape our present economic problems than putting people to work in private enterprise.

Aside from the indictments against those in the milk industry in Chicago, and some sour wisecracks about milk prices in Detroit, the food industry was not mentioned at all. It is apparent from off-the-record conversations that if the Department of Justice can do anything about it in Chicago, there will be a very considerable number of persons, already indicted, who will be able to make substantial deductions from their income taxes for certain future non-recurring expenses—estimated at "Oh—about $5,000." Only a desire to get the stalled economic machine going again motivates the action against those in the Chicago milk case, as far as could be ascertained.

One could indulge in pages of speculation as to the possible future outcome of the current philosophy in Washington. Yet it all comes back to the very disturbing fundamental fact that our real wealth is diminishing as measured by per-capita production. We must not be misled into unwise business policies by the outcome of the November, 1938, election. That election did not alter the basic facts in our national economy from which the present business problems stem.

For the first time since the New Deal started in 1933, something that appeals to one's intelligence begins to emerge.

Preventive Public Relations

IN THE FIELD of public relations activities, it is gratifying to observe how all industry is gradually taking hold of the newer philosophy. Nevertheless, progress is slow at best, for some individuals are all for good public relations for others as long as they themselves can do as they please. In time they will probably adjust themselves to the imperative needs of the times—or else.

The next step beyond public relations activities, as a *corrective* of something that is sour, is a well-planned activity to *prevent* a sour situation from developing. This calls for farsighted management, free from any prejudices about the prerogatives of management. Also it calls for a board of directors who will back up such a program.

Without question the future of industry is going to be profoundly tied up with preventive public relations. Only it won't come about until management and owners have a true picture of their own part in the program. It may mean considerable self restraint or actual relinquishing of time-honored autocratic precedents.

How Conventions Differ

A CURIOUS DIFFERENCE is noticeable between conventions in the various branches of the food industry. Some conventions are "buying" conventions. Others are merely exhibitions. At some conventions nearly half the machinery on the floor is sold for delivery directly from the convention hall. At others, the same identical exhibitors have very little expectation of making sales.

At a recent convention one company sold over $900,000 worth of equipment right off the floor. At others nobody buys. Which suggests that a very different psychology pervades some branches than others. There must be an obscure reason, but we cannot fathom it.

The Young Chap Knew Why!

RECENTLY one important factory management found an unexpected asset in a young chap whom they had hired at 40 cents an hour for one of the dirtiest underground yard jobs about the place. This young fellow, though a college graduate in chemical engineering, had not hesitated to put on overalls and go out and climb into the ditch with the laborers to carry out some rather menial tasks so that he could earn a living—meager, but nevertheless a living.

One day one of the principal control instruments in the central power plant broke down. It amounted to a real emergency. Nobody about the plant had ever had occasion to do much with this apparatus. Even the chief engineer of the company, who was also an experienced college graduate, did not know quite how the darn thing worked. Fortunately the young man happened by. He did know.

Needless to say the young man was put in charge of the control instruments after the factory repair man, sent for in a great haste, had made the necessary repairs. His college training in know-why-it-works proved to be worth a lot to this management. Perhaps other food plants may have a like experience, if they have a few well-trained food technologists around the place. No telling when one of them may know something really important. Trained brains are no handicap, if the young man's personality and common sense are right.

Mechanization for Public Health

THE U.S. PUBLIC HEALTH SERVICE is continuing its long-time drive to insure that milk supplies are pasteurized for the control of milk-borne disease. The marked correlation between outbreaks of typhoid, undulant fever, dysentery, and other such dangerous diseases, and the supply of raw milk from uncontrolled sources shows that this effort is not amiss. Far too many dangerous disease- carriers remain undetected to permit of the general sale of unpasteurized milk.

Many of the food industries may utilize this official effort in a good cause for the stabilization and advance of food processing. Active cooperation with the health authorities, both national and local, is in the interest of both the public and food processors, and should not be limited to milk.

Mechanization of other parts of food handling and close quality control may be needed for better health protection in places now unsuspected. The food manufacturer should be the one first to detect such need. All should be on the alert.

Packaging Competition —Last Call

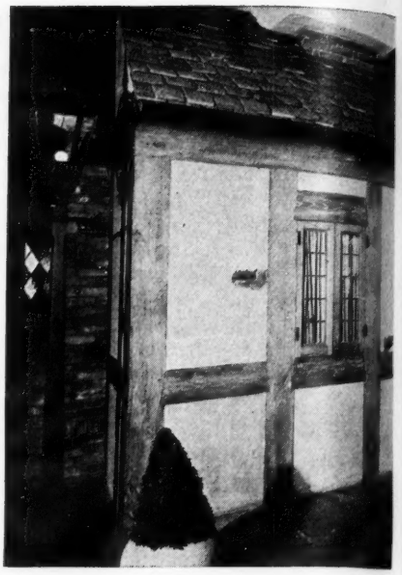
PACKAGES entered in the competition for the Irwin D. Wolf Award, sponsored by the American Management Association, will be judged on Feb. 16, 1939. The awards will be based on those factors which contribute to merchandising effectiveness, economy, efficiency and good design. Only packages placed on the market between Jan. 1, 1938, and Jan. 1, 1939, are eligible and the award will be made to the company using the package regardless of the entrant. Get the entry forms from Irwin D. Wolf Awards Administration, 232 Madison Ave., New York. Send the competition packages separately to Irwin D. Wolf Awards, Room 300, Empire State Building, New York, to arrive before Feb. 8. Entry fee is $5, plus 50 cents per entry for additional classifications.

The awards will be presented at the Ninth Packaging Exposition, Hotel Astor, New York, March 7–10.

PLANT TOURS Will Pay

In Sales and Good Will

By IVAN C. MILLER
Distribution Editor, Food Industries



As if it were lifted intact out of Sussex, stands "Ye Olde McCormick Tea House" where tea is served to

PUBLIC RELATIONS IN THE Food Industries

IN FAR too many cases, the food manufacturer's product is the only contact between the company and those who consume the product. Years ago this was enough. That was before business was on the spot—before doubt and suspicion were placed in the minds of consumers by those with an ax to grind. That was a day when only a small percentage of our people had even an elementary school education. Today is different. Today is an enlightened age, an age of multiple questions requiring adequate answers. When the public visits the plant, many questions are answered in a most convincing manner.

THIRTY or forty years ago, employees were not particularly interested in the affairs of a company because, having been recruited to industry, they found themselves enjoying a higher standard of living than they ever had enjoyed before and were perfectly willing to take for granted everything that the boss did and said. We are not dealing with that type of employee today. In 1890, only 5½ per cent of the population of the United States had any kind of secondary education, but today that percentage is up around 40 and in the case of the State of California, it is 84 per cent. We must realize that in dealing with these employees, the product of the American educational system who have had the equivalent of a high school education, we are dealing with a mighty force that cannot be driven and can be led only on the basis of information which they receive from us so that they can intelligently think things out for themselves. If we do succeed in appealing to the intelligence of a group of this kind, we have a much more stable condition than if employees took everything that we handed out to them without question.

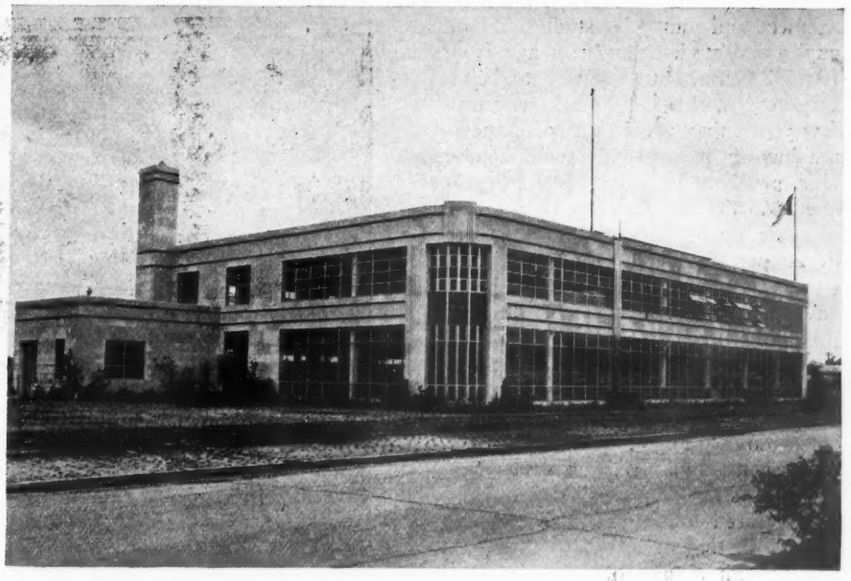
C. S. Ching of the United States Rubber Products Co. made this statement in an address before the convention of American Grocery Manufacturers Association in New York last November. What he said about the changed *status* of employees is equally true of the changed *status* of those who buy and consume the products of the food manufacturer. Years ago when but 5½ per cent of our population had any kind of secondary education, most everyone took food and food products for granted. Today, in an age when most everyone in the country has an elementary education and nearly half have a secondary education—today in an age when information is so widely disseminated by press and radio, through P.T.A. and numerous women's clubs—little is taken for granted. This is one reason why good public relations for industry is of growing importance.

One way to improve public relations and at the same time, answer many of the questions asked is to open the plant to the public. This has been accomplished by food plants in various ways.

Many years ago the big packers in Chicago opened their plants to the public. Hundreds of thousands of visitors have since taken a trip through the stock yards and plants. The visitors frequently expressed their amazement both at the volume of meat products which flow through these plants and at the cleanliness and sanitation which surround packing plant operations.

It is difficult to determine to what extent these trips through the plant have affected the consumption of meat products. Such results are difficult to

all plant visitors and a feeling of friendliness and courtesy and comfort prevails.



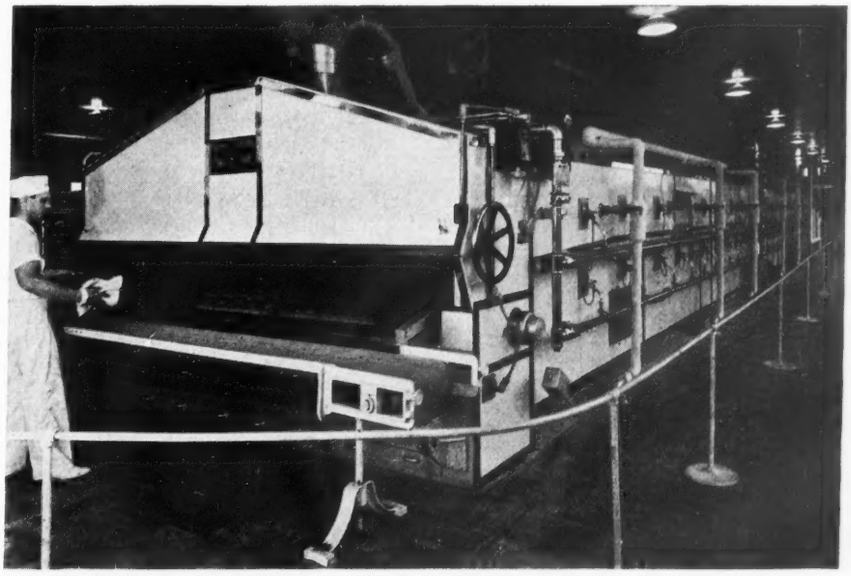
Mrs. Baird's Bread Company, Houston, is designed to permit consumers a full view of the operations inside. The make-up equipment and the 85 ft. long traveling oven are along the front of the building which, being practically all glass, is a permanent display window.

trace. Regardless of the effect on sales these packing plants have, however, made a multitude of friends out of a host of indifferent consumers who have visited the plants.

Many of the largest food industries encourage visitors to come to their plants and see how the products are made. Visitors at these plants are conducted through them by trained guides who point out, explain and answer questions.

When General Foods Company opened a new cereal plant at Battle Creek, Mich., approximately 40,000 visitors were guided through the plant during the summer. Each year 35,000 to 40,000 tourists through New England visit Gorton-Pew Fisheries at Gloucester, Mass. Approximately the same number each year visit and tour through the Beechnut plant at Canajoharie, N. Y.

The products of these companies are in wide distribution. The number of visitors to these plants each year represents but a very small portion of the population of the areas covered by these food manufacturers in the distribution of their products. However, at the women's clubs, over the bridge table, over a cup of tea and even over the back fence, the story is told and retold, "my dear, it's just unbelievable all the things they have to do to make such and such a product, and you should see the number of people it takes, all in white uniforms, and clean—my dear, I'm ashamed to admit it—but that factory was cleaner than my own kitchen."



The guard rail installed temporarily in Mrs. Baird's Bread Company has become a permanent fixture, for it permits visitors to browse through the plant at leisure without the use of a guide or without interrupting the workers. Women like this plan of inspection, because they can spend more time in the plant and can satisfy every curiosity about bakery operations.

While it is difficult for the large food plants to trace the direct results of plant tours by increased sales, actual increases can be traced by smaller food plants operating in local territories. Large food plants must often be content with the assurance that by opening their plants to the public, they are building good will and understanding not only for themselves, but for the whole food industry. The smaller local plants see their investments returned in sales increases as well as general good will.

Paul H. Helms, president of Helms Olympic Bakeries, Los Angeles, Calif., stated in Food Industries, December, 1938, "From a merchandising point of view our use of air conditioning is worth many thousands of dollars in customer and consumer advertising, and during the past year, 40,000 visitors have come to our Olympic bakery to observe and hear comments on the favorable features of air conditioning. Schools and colleges in Southern California are using this bakery for man-

agement and industrial studies. These pupils and students vary in age from 10 to 21 years. In addition to being certain potential customers within a few years, they are factors of immediate buying influence in their homes. Our products in 1938 are selling at over $65,000 per week, a 10 per cent increase over 1937, and an increase of 20 per cent over 1936. . . . This gain was made with less purchased advertising than in any of the five previous years."

A beverage plant in a thickly populated area issues plant tour invitations to groups in areas where sales have fallen down. This company has found that when groups from an area where sales are slipping visit the plant, sales are restored to normal, often to peak volume in that area.

Although many different plans are used by those manufacturers who have opened their plants to the public, the basic idea is the same—to convince the visitor that the products are made in clean, sanitary plants, with accurate quality control by skilled workmen.

Many of the new plants of the Continental Baking Co. provide air conditioned assembly rooms for the convenience of women's clubs. Here the women's groups may hold meetings or card parties. The only requirement placed on these clubs is that the groups attending make a brief inspection of the plant. This they seem eager to do.

Not a few dairies and ice cream companies use the clubroom as an inducement to bring groups of women to the plant. Often from the clubroom the women may observe the operations of the plant through plate glass observation windows. Sheffield Farms Co. in New York City employs this method, as does the Knowlton's Dairies, San Antonio, Tex. Some of these plants do not require an inspection trip by women's club guests. The arrangement of the assembly room in these plants is such that the important operations in the plant can be seen by the visitors from the assembly room. Instead of bringing the visitor into the plant, some dairies, bakeries and beverage manufacturers glass in the front and sides of the building so that all passers-by may watch them make their products.

In the case of the Mrs. Baird's Baking Co., Houston, Tex., the plant location, building design and plant arrangements were planned so that visitors could inspect the plant without the aid of guides. The location of the plant was chosen not in the industrial district but adjacent to one of the best residential districts, on a street which carries the traffic from this district past the plant. The plant was designed as one large display window, glassed in with polished plate glass. The make-up equipment, proof-box, and 85-ft. long ovens are in the front of the building parallel to the main street so that thousands of motorists see the daily operations of the bakery.

The inspection window of Knowlton's Dairy, San Antonio, Texas, where visitors and guests can see for themselves just how milk is handled and made safe for consumption. The teacher was wrong. Milk comes from a machine. Anyway, these youngsters visiting Shefield Farms Co., N.Y.C., will drink more milk and tell mother what milk to buy.

The plant is arranged to take care of visitors in large groups or small, and requires no guides. A guard-rail which starts at the office and continues throughout the plant, conducts visitors, at their leisure, into the materials storage room where visitors see how the ingredients of bread are weighed out from a temperature and humidity controlled storage room. Visitors watch flour blended, sifted and weighed and conveyed to the big automatic mixers—then follow the dough to the fermentation room. By means of arrows directing their course, the visitors are conducted to the point where the dough goes through the divider, rounder, overhead proofer and molder to racks on a tramrail for the proof box. The proof box is designed with glass windows adjacent to the walk-way for visitors. Windows in the sides of the traveling oven permit visitors to see the bread while in the process of baking. No single operation in the entire process is concealed from a visitor.

The fact that more than 30,000 visitors went through this plant during the first three nights after its opening, and that hundreds of visitors have gone through the plant since, not only gives ample evidence that this method of conducting visitors through the plant is efficient, but that there is a widespread interest among consumers in seeing what goes on inside the food plant.

Opening a plant to the public builds good will and creates better understanding. There are other advantages. One food plant with a large number of delivery trucks was receiving an increasing number of complaints from nearby residents who objected to the noise of the trucks. All possible measures were taken to quiet the trucks, but the complaints persisted. The management decided to add to the regular "open house" to all visitors a special "visiting night" to all residents within several blocks surrounding the plant. Invitations were issued. The neighborhood turned out en masse, toured the plant, hobnobbed with employee friends—enjoyed refreshments. That ended the complaints.

There is much difference of opinion regarding the advantages of serving refreshments. Some food plants serve a complete and often elaborate meal to visitors, others provide a place with tables and chairs where visiting groups may spread their own lunch, supplemented with products of the company's manufacture, others provide only a sample package of one or more products as a souvenir.

Many plants, both large and small, use plant visiting for building good will and increased sales drives among their retailers. Salesmen invite grocers and their clerks or groups of wholesalers to "a party on the company." These are often night functions if the plant operates at night. Day or night, the "party" ends with

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More Safety Needed In Steam Jacketed Kettles

Inspection and certification of kettles used by food manufacturers will result in savings

By GEORGE H. TAY
Lee Metal Products Co., Inc., Philipsburg, Pa.

SAFETY REGULATIONS that apply to steam jacketed kettles are not generally understood. Many users are inclined to set their own standards, based generally on experience with metals entirely dissimilar from those being used and the results in some cases have been far from satisfactory.

Construction of steam jacketed kettles has always been subject to the discretion and experience of kettle manufacturers, with no universal rule or formula. Coppersmiths were the first kettle builders, and a good coppersmith with years of experience could gage the thickness of metal necessary to withstand a given pressure with uncanny accuracy, and could temper the soft copper shells by hammering so that failures were uncommon occurrences.

With the advent of corrosion resisting metals and alloys such as pure nickel, Monel metal and various stainless steel alloys, each of which has a different tensile strength, the old method of depending upon expert coppersmiths could not be applied. Nor could the thickness of copper used in a given size of kettle be used as a basis for computing the thickness of these newer metals and alloys.

Kettles made from each of these metals were demanded by the food and chemical industries, and specifications for the weights of metal to be used for different steam pressures were as varied as there were bidders for the work. There was no standard of construction. In fact, there is no official standard today. Our company was among the first to produce steam jacketed kettles from pure nickel in this country, and we found it imperative that we have a standard from which to work. It was expensive experimenting during the first two or three years, but we eventually developed a formula for each metal that would enable us to produce kettles for any given pressure, with a factor of safety of five. The results were submitted to one of the foremost boiler insurance companies, and, with some changes, these formulas were accepted for computing metal thickness in steam jacketed kettles which are safe for insurance.

The main object of a kettle manufacturer is to produce as light kettles as possible for two reasons: First, all of these metals have a lower heat conductivity than copper, and the heavier the metal, the slower the cook. Because, however, of greater tensile strength and the lower rate of metal fatigue, considerably lighter gages may be used in these metals, which helps to lower the cooking time. Second is the cost. While kettles made from these metals cannot be expected to compete in price with the softer and less expensive metals, at the same time, if the price can be kept below a certain point, it is economy to make a greater initial investment for the advantages of longer life and freedom from upkeep and contamination.

Back of these two, may we say, commercial reasons, lies the safety factor, which the producer of pressure vessels must watch closely. It is a blot on any manufacturer's record to have kettles fail in the field.

New Jersey, Pennsylvania, Ohio, and I believe, California, have passed unfired pressure vessel laws that include steam jacketed kettles in the larger sizes only. These require A.S.M.E. or similar inspection on kettles having 5 cu.ft. or more steam space and operating at over 15 lb. pressure. The majority of the standard types of kettles, having hemispherical bowls, have less than 5 cu.ft. of steam space, and are, therefore, not subject to such inspection.

However, the time is coming when all pressure vessels, regardless of size or pressure, will be subject to state inspection. It is to be hoped that when such laws are passed and become effective, they will coincide so that a single inspection and stamping will pass the various state requirements. Of course, such inspection will have to be made by an inspector furnished by the state, or one of the accredited insurance companies, and will tend to increase the cost of kettles, as inspection will be necessary at different stages of construction. While this may add slightly to the initial kettle cost, the user will have assurance that his operators are in no danger from faulty construction. Such regulations will cause no more hardship than the present boiler regulations, after they have once been adopted.

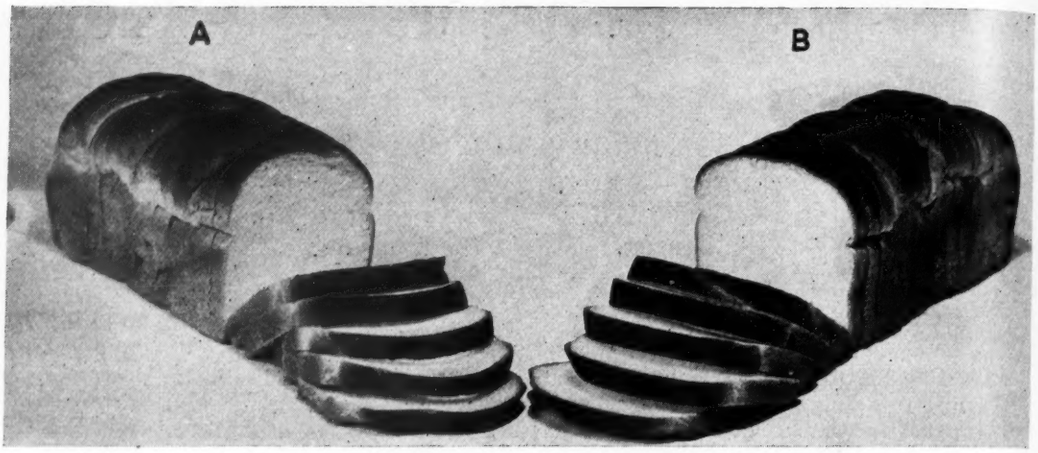
A good rule to follow in regard to steam jacketed kettles is to build them to stand the full boiler pressure, rather than to install lower pressure kettles and use a reducing valve in the line. In many cases, where the product will not stand the temperature of high pressure steam, the reduced pressure is necessary, but it is safer to use the high pressure kettle, in event the reducing valve fails to work. Also, conditions in a plant may change, and, unintentionally, the kettle may get connected to a high

(Turn to page 109)

▶ ***Food manufacturers using processes requiring such indirect* HEAT TRANSFER *operations as* COOKING *in steam jacketed kettles will find that this article brings out facts that should have the attention of most food processing concerns, including makes of***

Bakery Products
Beverages
Canned and Preserved Foods
Chocolate Products
Confectionery
Dairy Products
Ice Cream
Meat Products
Salad Dressings and Specialties

The Truth About FROZEN



In physical appearance, month old frozen bread (B) differs from day-old bread (A) only as loaves from different batches are likely to vary.

Taste is almost as good as that of fresh bread, but much is still to be learned about the technology of bread freezing and its effect on staling

By **WILLIAM H. CATHCART**
American Institute of Baking, Chicago, Ill.

PART I

MONTH-OLD Frozen Bread rated a "for" vote of 26.7 per cent and a "no difference" vote of 18.25 per cent in an eating test in which it was compared with fresh bread made from the same formula and in the same bakeshop. A total vote of 241 was taken, 56.05 per cent being "against" the frozen bread.

When the ballots were evaluated on a preference basis according to the Platt method of sampling[1], the rating of the two breads by this eating test vote showed 392 points for the month-old frozen bread and 477 points for the fresh bread. This narrow 85 point margin on the preferential ballot basis occurs because those who had a preference for the fresh bread also thought the month-old frozen bread was "good" bread.

This test was carried on at the 41st annual meeting of American Bakers Association in Chicago. Those voting were members and guests attending the luncheons on Oct. 17, 1938, of the American Bakers Association and the Association of the Baking Industry Allied Trades. The voters came from all sections of the United States and from Canada. Both men and women of wide range in ages and in familiarity with bakery products voted. They constituted an average cross-section of adult business and professional people who eat bread in widely varying amounts per meal.

The test samples were individually wrapped slices of the two breads as nearly alike in size, shape and general physical appearance as they could be made. These were coded so that the identity of each bread was known only to the one carrying on the test. One slice of each of the two breads was at each plate with a ballot card (Fig. 1) requesting that the bread be critically examined and given a comparative rating.

The samples which were served were from loaves of bread held in storage at a temperature of approximately –22 deg. C. From the following report it will be noted that scientific investigation shows that bread frozen at approximately –22 deg. C. will remain "good" for only about 20 days. In view of this, the results of the eating test made on the bread after a month are enlightening and show that the bread is still quite acceptable.

The eating test was the climax of a research project carried on at American Institute of Baking over the

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▶***Keeping bread for long and short periods by freezing has been tried for various purposes: To avoid conflict with laws against night work; to avoid the necessity of baking in lumber camps, on board ships, on holidays; to prepare for labor troubles; and to cut down high cost night work.***

How effective is the method? A recent large-scale eating test showed that month-old frozen bread rated almost as high as fresh bread.

Is freezing the way out of the problem of "stales," and other distribution troubles and high costs? This article shows that haphazard study of new methods may lead to incorrect conclusions. It also shows that frozen bread distribution on a wide commercial scale will require more research and new technique before it can be entirely satisfactory.

Those interested in* REFRIGERATION *and* STORAGE *will want to read this article, as well as

Bakers
Frozen Food Packers

BREAD

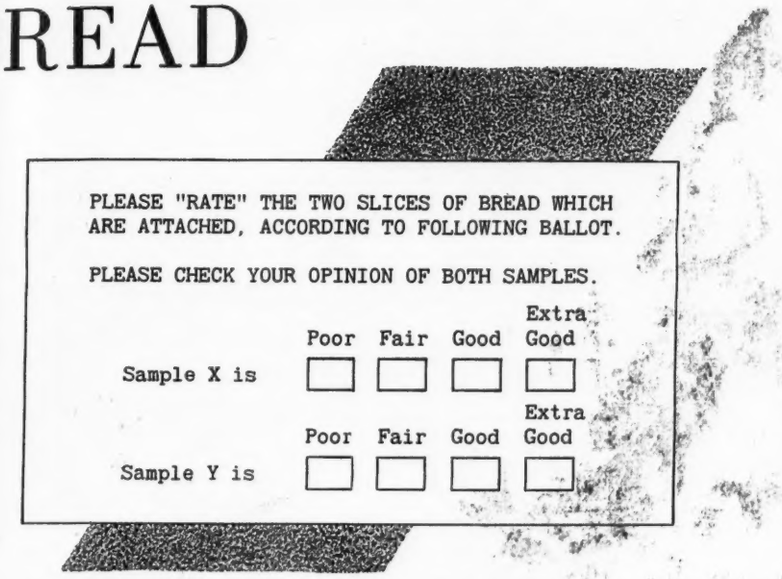
PLEASE "RATE" THE TWO SLICES OF BREAD WHICH ARE ATTACHED, ACCORDING TO FOLLOWING BALLOT.
PLEASE CHECK YOUR OPINION OF BOTH SAMPLES.
Poor Fair Good Extra Good
Sample X is
Poor Fair Good Extra Good
Sample Y is

Fig. 1—With the preferential type of ballot, the breads under test can be given a comparative rating indicating whether the judges like both breads but prefer one, like neither but prefer one, or like one much better than the other.

past year and a half. The month-old bread for this particular test was baked on Sept. 17. It was frozen in the commercial-size freezing rooms of Armour & Co. and Swift & Co. and kept there until Oct. 17. Then it was removed to room temperature to be thawed and made ready for comparison with fresh bread baked from the same formula and the same lots of raw materials.

The test was the first, to the best of our knowledge, made on frozen bread in this manner on a large scale in the United States. Conditions in Europe, however, led to an attempt two or three years ago, particularly in Holland[3a], to make commercial application of the research findings of the late Dr. Johannes R. Katz[2]. The attempt did not become a commercial success, however.

Preceding the A.I.B. test, reports came to our attention concerning the freezing of bread, cakes and pastry in regions where freezing temperatures are available out of doors, at least during the winter season. Most of these reports gave favorable results. Since the work at the American Institute of Baking has been in progress, many letters and comments have been received telling of miscellaneous practical experiments which have proved successful with frozen bread. We have the case of a lumber camp which bought enough bread to last through the winter season and to make baking unnecessary at the camp. We have reports from Alaska of bread being left frozen until used and remaining "fresh" during the storage period. There are reports of boats such as freighters without a bakery on board which keep their supply of bread frozen for the entire voyage, so that fresh bread can be served daily. There is a case of bread being stored in large freezers in Brooklyn, N. Y. The quantity of bread was enough to service the restaurant trade of that particular city for one day. The reason was anticipation of delivery troubles. Although the delivery trouble did not develop, this bread was served about 40 days later with excellent acceptance by the trade.

In most of the reports, the details are missing—freezing temperatures and the conditions under which the bread was consumed are not known. Experience has shown that results obtained through systematic research are the only ones that can be relied upon to bring out the facts. It is the general opinion among those who

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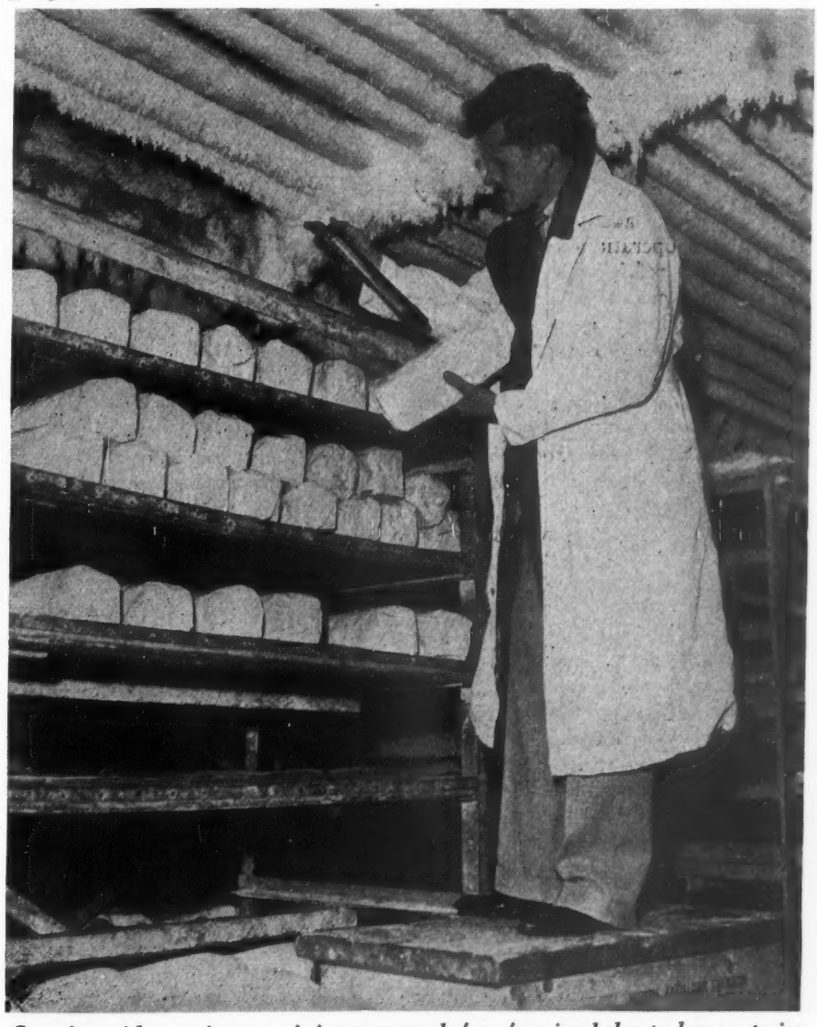
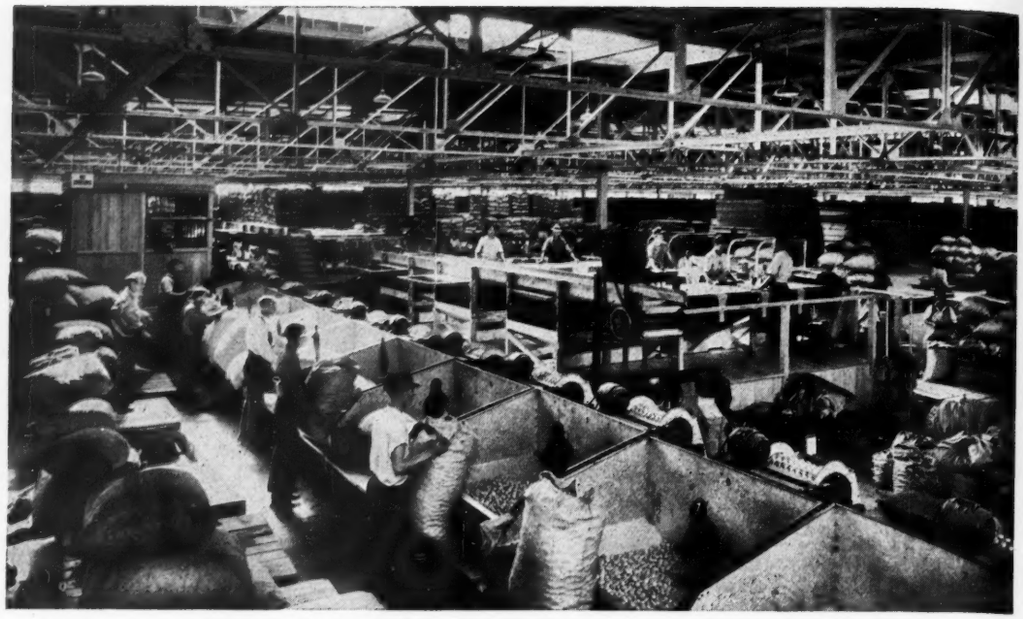


Covering with a moisture resisting wrapper before freezing helps to keep exterior appearance of frozen bread like that of commercial "fresh" bread



General view of packing operations in the central warehouse of the California Walnut Growers Association. In the foreground are ten blending and branding machines which discharge a uniform mixture of a desired grade on the conveyor belt leading to the three inspection tables shown in the central position of the picture.

Warehouse Costs *Lowered* And Product *Quality Bettered*

Standard warehouse structure adapted to new use at low cost by means of new air-conditioning system

SAVINGS made possible by centralized operations and air-conditioning refrigeration are illustrated by the central warehouse of the California Walnut Growers Association, producers of Diamond Brand walnuts. The management of this cooperative growers association, with 8,000 members handling 85 per cent of the entire California production, was faced with the problem of annually increasing tonnages of nuts and, as early as 1935, was impressed with the need for adequate packing and storage facilities in one location. This was made necessary by the fact that walnuts are shipped to the Los Angeles plant for blending and branding from 40 local association processing plants.

Formerly, these shipments had to be warehoused at various localities in the Los Angeles area which involved not only rentals, labor and trucking costs, but resulted in breakage due to repeated handling of the nuts. This method of operation was particularly inefficient because it was not feasible to have branding and blending machinery at all of the warehouses, and therefore it became necessary to move the nuts from storage to a central point for these operations before shipping them out.

Estimates indicated that an annual saving of $26,000 on the items of labor and truckage alone would have been effected in the years 1933 and 1934, had the operations been carried on under one roof. With this study of the situation as a background, the board of directors of the association voted to construct a $400,000 warehouse, 420 ft. wide and 700 ft. long covering an area of 6¾ acres.

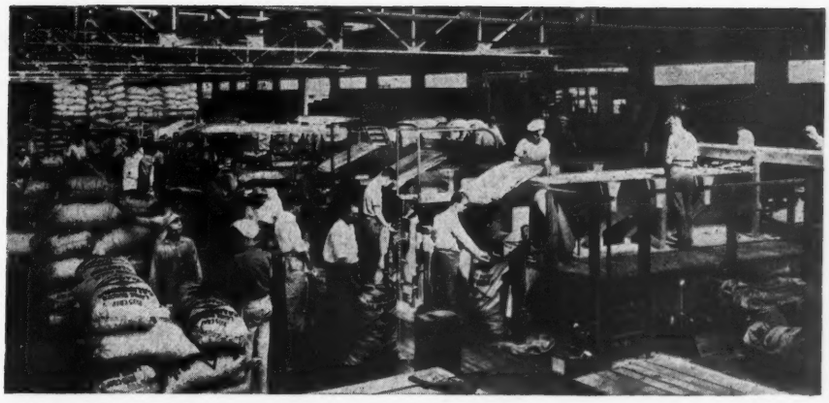
The building, completed late in 1935, is one of the largest of its type in the world. All of the required space is on one floor, avoiding the cost of elevators, saving the space that would be taken by them and also the loss of time and labor if they were used. The building is of steel frame construction supporting a flat roof with elevated skylights at frequent intervals. Walls are of concrete and brick pierced by 23 rolling steel doors. The floor is of reinforced concrete laid on an earth fill to the same level as the floors of freight cars. The warehouse is served by four spur tracks, one on each side and two running inside through the center, facilities for 50 cars being available. In the center of the building is a drawbridge which lowers across the center tracks to provide communication between the two wings of the building. Trucks and trailers are loaded at the eight doors along the front of the building.

The building is designed to hold 250,000 bags of walnuts weighing 100 lb. each, and has held 260,000 with ample room for economic handling. Machinery for blending, branding and repacking was designed by the association's engineers and incorporates unusual flexibility and efficiency with high capacity. Two batteries of blending and branding machines serve six inspecting tables and twelve packing units of the automatic type. Each of the ten blending and branding machines in a battery is individually powered and all of the motors and conveyors in the operation are controlled from a central desk mounting the start and stop buttons for all of

the motors in the packing operation.

A feature of the two repack units, each of which has a normal capacity of 800 bags per hour, is the branding and blending machines. These consist of an endless pocket draper fed from a hopper with a single grade of walnut. The endless pocket draper drops a predetermined number of that particular grade of nuts on the conveyor in a given time. Thus to obtain an equal blend of two grades of nuts an equal number of units would be used and different percentages would be obtained by varying the number of blending machines dumping a particular grade on to the conveyor.

Transportation within the warehouse is handled by electric trucks of the high-lift, retracting fork type, which transport and stack the sacks. Bags are placed on pallets capable of holding 25 each and especially designed for this operation. The operator of the electric trucks lifts one pallet load, sets it on top of another and then moves the entire 50 bags to a designated spot in the warehouse. During the peak of the season operations are carried on 24 hours a day and the electric lift trucks are operated over the full time by the use of removable battery sets, so that a spare battery can be charged while the truck is in operation and then interchanged for the battery that has been used, which is in turn charged.



View of the sacking equipment where nuts which have been blended, branded, and inspected are sacked for shipment. Twenty-five sacks are stacked on the wooden pallet shown at the left.

The completion of the centralized packing and warehousing facilities left only one operation to be carried out outside the facilities of the association. That particular operation was cold storage. Formerly stocks held for spring or summer had been transferred to commercial cold storage plants in the spring. This is the only way to prevent insect infestation during the warm summer months and to prevent deterioration in color and flavor. Upon investigation, the association decided that cold storage facilities could be provided within the new central warehouse at a cost of approximately $85,000 which, together with operating charges, represented an investment per bag equal to the lowest rate obtainable for one season's commercial cold storage, plus the transportation cost of moving the nuts in and out of such storage.

One section of the warehouse, covering approximately 40 per cent of the floor area, was set aside for an

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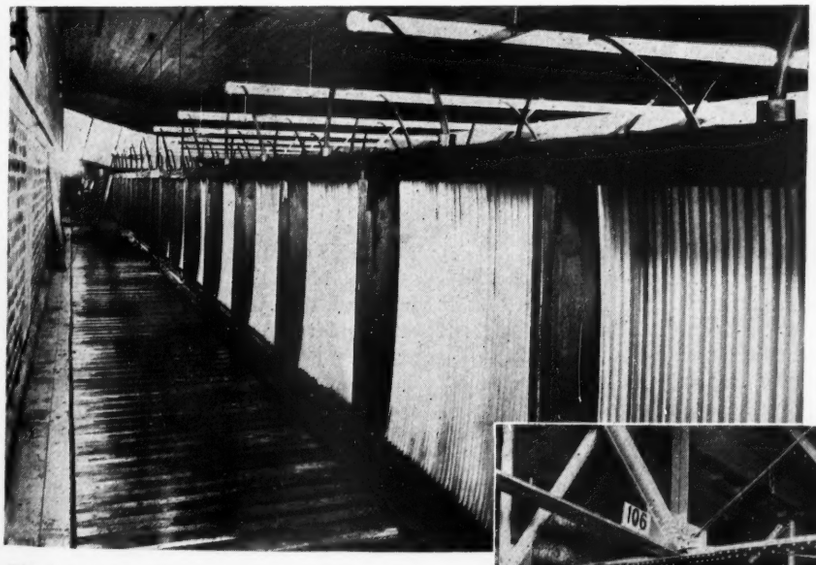


The brine heat transfer units used to cool the air. This is a series of cloth strips, 6 ft. long and 4 ft. high, over which the chilled brine flows downward. Air passes between the wet films of brine on each side of the cloth.

Refrigerated section of the walnut warehouse. Chilled air discharges through the ports at the bottom of the ducts into the room. It is drawn across the floor and up the outer wall to the suction return ducts.

Profits from BYPRODUCT RECOVERY

Depend Upon Products Made

Crude milk sugar and poultry feed found to be suitable outlets for all milk solids in whey

By W. E. STRINGER
Sheffield By-Products Co., Hobart, N. Y.

▶ ***Commercial success in the recovery of byproducts depends upon determination of what products to make and how far it is economical to carry recovery. In this article it is shown that, in the recovery of milk solids from whey, only part of the milk sugar should be recovered, and that poultry feed forms a suitable outlet for the remaining solids. This information is important to;***

Butter Makers
Cheese Makers
Milk Plants
Food Engineers
Food Technologists

IN THE PRODUCTION of byproducts from milk, skim milk which is practically fat-free may be considered as the starting point. By means of Sheffield's improved casein process, the casein is precipitated with hydrochloric acid and separated from the whey which is the watery part of milk. The substances which are soluble and contained in whey are milk sugar, albumin, milk salts and vitamins, while the bulk of whey is made up of water. This may be seen by observing the figures for the composition of a quart of average surplus milk:

Water	87.17 per cent
Fat	3.74 per cent
Casein	2.87 per cent
Milk Sugar	4.94 per cent
Albumin	0.56 per cent
Mineral Salts	0.72 per cent

Whey from the casein operation is sent to an iron tank known as the coagulating tank. The acidity of the whey entering the tank is 0.40 per cent, figured as lactic acid. By adding milk of lime, this acidity is neutralized to 0.05 per cent acid as lactic. Then by means of a perforated steam pipe set in the bottom of the tank, live steam is used to heat the whey to boiling.

This combination of heat and lime coagulates the albumin. Thus soluble albumin is converted into an insoluble form, making its removal possible. In a few minutes, the albumin sludge has settled to the bottom of the tank. Then, by means of a swing pipe, the top liquor is decanted till it reaches the level to which the albumin sludge has settled.

As shown in the diagram of the crude milk sugar operation, the decanted liquor is sent to a double-effect evaporator to be concentrated, while the albumin sludge is pumped through a filter press to effect more complete separation of liquor from the albumin which has to be dried.

The evaporator is of the vertical rapid concentration type, and here the liquor is concentrated to 20 deg. Baumé, which is equivalent to about a 30 per cent sugar syrup. At this concentration, the sugar content is below the point at which crystallization begins, and it is pumped from the double-effect pan to a storage tank.

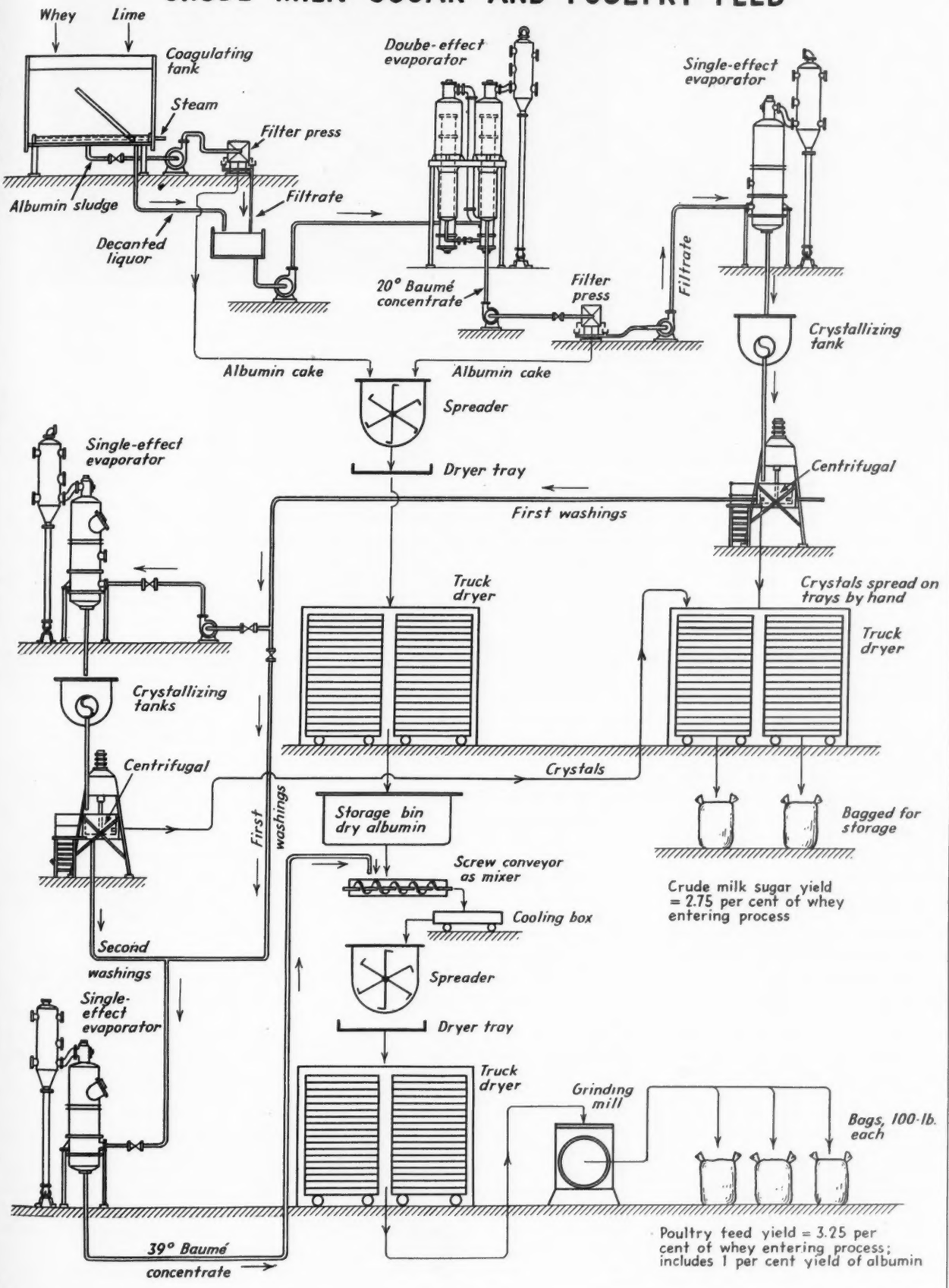
A further clarification is necessary at this point to remove insoluble matter which has formed due to concentrating the liquor. This insoluble matter consists of albumin and milk salts, and removal is effected by pumping through a filter press. The cake is mixed with the albumin obtained from the filtration operation already described.

The clarified syrup next goes to a single-effect or finishing evaporator for its final concentration. In this operation, the sugar syrup is drawn into the pan and concentrated under vacuum. By means of experience gained through continued observation, the operator is enabled to know just when the sugar has crystallized enough and thus when the "strike" should be made. Due to the swirling and boiling action of the sugar syrup in the vacuum pan, the syrup constantly strikes the watch glass located in the cover of the pan. The operator observes this syrup on the glass and when crystallization starts, the syrup which strikes the glass has the sugar crystals interspersed throughout. As evaporation continues, the syrup concentrates on the crystals, and thus the crystals build up. When the sugar has grained to the desired point, a strike is made and the contents of the pan is dropped into a mixer ready for the washing operation.

The mixer is situated just below the outlet of the pan, and consists of a rectangular tank with a rounded bottom. A horizontal gear-driven shaft drives a double ribbon concentric worm which is concentric with the bottom of the tank. The outer ribbon is practically flush with the sides and bottom of the tank. These two ribbons are so arranged on the shaft that one has a right-hand drive and the other a left-hand drive. The worm turns very slowly at about 6 to 10 r.p.m. By means of this arrangement, the batch of sugar crystals is kept turning just fast enough to keep the mother liquor and the crystals in motion and thus prevent "setting up" of the batch before the washing operation which follows is completed.

From the mixer, the sugar crystals and mother liquor are fed by gravity through a copper pipe to a basket type Hepworth centrifugal or "washer" as it is termed. This centrifugal consists of a perforated cylindrical basket which revolves at a speed of 600

FLOW SHEET FOR MANUFACTURE OF CRUDE MILK SUGAR AND POULTRY FEED



r.p.m.; and here the separation of the sugar crystals from the syrup is effected by centrifugal force. A small stream of water played on the revolving sugar crystals aids in the further removal of soluble impurities. When this washing operation is complete, the speed of the washer is stepped up to 1,200 r.p.m. and a quick removal of water effected. By means of a knife arranged so that it may be placed flush with the side of the revolving basket and lowered or raised the length of the basket, the operator is enabled to revolve the basket slowly and rapidly cut down the cake of crude milk sugar which lines the walls of the centrifugal.

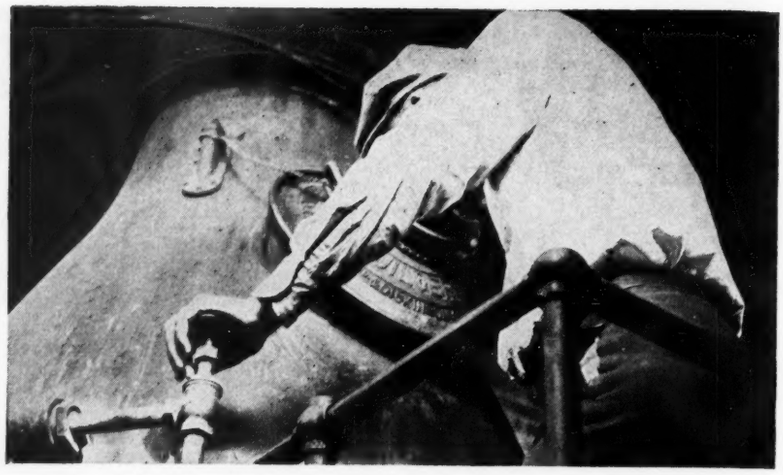
These crude milk sugar crystals are now spread by hand on screen trays and racked on trucks to be placed in a tunnel dryer and dried.

Reference to the flow sheet of crude milk sugar operations will show that the combined syrup and wash water from the centrifugal next go through further operations for a more complete recovery of crude milk sugar crystals and a final production of poultry feed which makes for complete milk solid recovery.

It has been found by experience that the cost of maximum recovery of milk sugar is prohibitive and that incorporation of part of the sugar in the production of poultry feed is more advisable. Although this course apparently sacrifices yield in the recovery of milk sugar itself, the loss is more than made up in the production of poultry feed which must contain a guaranteed amount of milk sugar. This is more strikingly brought out by the fact that in the old method of milk sugar recovery, wherein a maximum yield of milk sugar was sought for, only a 4 per cent yield of solids was obtained; but, by our present methods, a 6 per cent yield of solids is obtained at a much lower production cost.

The reason a low yield on milk sugar is obtained may be attributed to the milk salts and soluble proteins contained in milk and their inhibitive effect on crystallization of milk sugar. If the wash water from these operations is used continually, the milk salt content builds up proportionately and milk sugar recovery is practically impossible. However, the nutritive effects of these substances are well recognized and their incorporation in a poultry feed makes for a better product in a market where competition is very strong and, at the same time, insures complete recovery of milk solids at a minimum cost.

Observe from the flow sheet that this wash water may go either to the recovery of more milk sugar or directly to the manufacture of poultry feed. As is shown on the flow sheet, the usual procedure is to obtain one recovery of milk sugar from the wash water. To accomplish this, the liquor is sent to a finishing pan and concentrated under vacuum to the desired point for crystallization of milk sugar, and then the contents of the pan is sent to cooling tanks where crystallization of the milk sugar is allowed to proceed. Washing of the crystals is accomplished in the same way as described above, and we again obtain crude milk sugar crystals and wash water.



Operator at evaporator, observing concentration of milk sugar, ready to make the "strike."

The wash water at this stage contains substantial amounts of milk sugar, milk salts, soluble proteins and vitamins; and recovery in the form of a poultry feed has been found to be the most economical operation to follow. This is accomplished by concentrating the wash water under vacuum to 39 deg. Baume.

The contents of the pan are now dropped into a mixing device, wherein the dry albumin obtained from the operations described is thoroughly mixed with the sugar liquor being dropped from the pan. The mixing device consists of a horizontal cylindrical trough in which is contained a motor driven screw. By means of another motor driven screw, the dry albumin is fed from a hopper into the sugar liquor trough. Here an intimate mixing of sugar and albumin takes place. By controlling the sugar liquor feed from the pan by means of a valve, the correct proportions are obtained. The dry albumin absorbs considerable moisture in the sugar liquor and the mixed product has a granular consistency and is not in a too soggy condition. This material is allowed to "harden" or, in other words, the sugar is allowed to crystallize further. It is then spread on trays by a spreader.

This spreading device consists of an iron drum with a perforated bottom. By means of a rotating agitator within the drum, the whey powder is forced through the perforations and dropped into trays to be dried. The trays are then racked on trucks and placed in tunnel dryers where drying is carried out at a temperature of 160 to 180 deg. F. for 3 to 4 hours. Because of this manner of processing, wherein a granular product is obtained which is not in a too soggy condition to be spread evenly on trays by the spreading device, the material is evenly dried.

From the dryer, the contents of the trays is dumped into a hopper which feeds a hammer mill where the material is powdered. The product is now sacked in 100-lb. burlap bags with water proof liners.

The finished product has a pleasant light yellow colored appearance and has a guaranteed milk sugar content of 30 per cent and protein content of 25 per cent.

Concerning the matter of yields, we observe that the total solid recovery from whey is approximately 6 per cent, and that this is split up into albumin recovered, crude milk sugar recovered, and poultry feed recovered. The individual figures may then be listed as approximately 2.75 per cent yield on crude milk sugar and approximately 1 per cent yield on albumin which goes into poultry feed anyway. Thus the final figure regarding yield would be 2.75 per cent on crude milk sugar and complete recovery of all other solids in the form of poultry feed.

Pure milk sugar production from crude milk sugar will be discussed in a forthcoming article by Mr. Stringer.

Builds Business on STANDARDIZED FLAVOR

Vegetable juice manufacturer succeeds with new line through rigid quality control

By JOHN B. ROLLE
Vegetable Juices, Inc., Chicago, Ill.

Vegetables of selected variety and juice quality are sorted and trimmed preliminary to thorough washing and division into small pieces.

Freshly chopped or crushed vegetables are extracted for 24 hours at 60 deg. F. in tightly closed stoneware containers with a predetermined quantity of the condensate. This gives a juice of standardized essential-oil or essence strength and vitamin and mineral-salt content.

PRODUCTION of vegetable juices and vegetable-juice cocktails is rightfully a depression-born industry. Prior to 1930, the juicing of onions and garlic for liquid seasoning and of tomatoes for direct consumption was limited to an experimental, or a very small industrial, scale. In fact, these vegetable juices were so new that very little effort was being made to determine the potential market for them. The vitamin and mineral-salt content of human foods was just beginning to attract the attention of the public and to be featured in food advertising. Delicate and uniform flavoring or seasoning was still in the hands of expert chefs and cooks in public eating places and private homes.

But the picture has changed. There has been a rapid, almost sensational, development of packaged ready-to-eat foods, such as canned soups, specialty meats and infant or health foods. This has stimulated the demand for fresh, standardized flavoring or seasoning ingredients and for fruit and vegetable juices containing natural vitamins and mineral salts. Consequent development of juicing technology and equipment early made these juices available to the mass market with minimum deterioration in vitamin content, natural color and flavor and general wholesomeness. Packaging and marketing procedure kept pace with production technic to put the juices into the hands of the ultimate consumer in the most convenient manner possible.

A vital factor in the development of this new industry is controlled quality. Among the specific factors which determine the quality of juices are freshness of flavor, naturalness of color, freedom from fiber and other sediment-forming substances, together with uniformity in content of essential oil or essence, vitamins and mineral salts. This is true whether the juices are prepared for flavoring and seasoning or for direct consumption.

When produced under the ordinary methods of squeezing or expression, juices are subject to the varying differences in flavor and nutritive strength that characterize the fresh vegetables from which they are prepared. When produced in small quantities for local consumption or for a limited faddist market, this lack of uniformity in flavor and nutritive value did not matter so much. Consumers were not as critical and exacting as when marketing is on a nation-wide basis. The demand for a uniform, standardized product became particularly insistent when the juices began to be used for flavoring or seasoning purposes, as are celery, parsley, garlic and onion juices.

As one step in obtaining the re-

(Turn to page 113)

▶ ***Much food engineering and technology enter into the preparation of vegetable juices of high standard. Involved in the process are*** **PRESSING, DISTILLING, COLD EXTRACTION, FILTRATION and STERILIZATION.** ***This article on the methods employed and results obtained should interest***

All Food Engineers and Technologists
Baby Food Manufacturers
Canners
Specialty Meat Manufacturers
Health Food Manufacturers

Uses Laboratory

To Direct Process, Assures Quality

Maltster guides plant operations with facts found by scientific analyses

By LAWRENCE E. EHRNST

Froedtert Grain & Malting Co., Milwaukee, Wis.

IN CONTROLLING the quality of his finished product, malt, the maltster has to contend with problems that are mechanical, biological and chemical in nature. This three-phase aspect of his problem is represented even in the selection and grading of the barley with which he starts. He can choose from among many different types. Each type has its own peculiar characteristics, which may or may not make it suitable for malting.

The good qualities that a maltster looks for in barley are (*a*) light color free from stain, (*b*) straw-like odor free from mustiness, (*c*) thin husk, (*d*) large, short and plump, uniformly shaped kernels free from broken and skinned kernels, foreign seeds and heat-damaged and diseased kernels, (*e*) high germination energy and capacity, (*f*) proper protein content, (*g*) high yield, (*h*) mealy starch body free from steeliness, and (*i*) moisture content of less than 15 per cent.

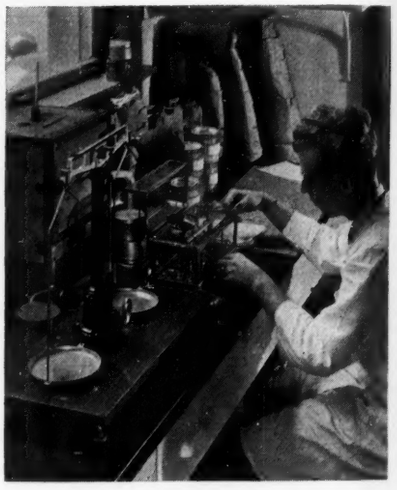
Among the barleys that have these good malting properties are the Oderbrucker and such common varieties as Manchurian types, Velvet, Wisconsin Pedigree No. 38 and Peatland. The Oderbrucker is the superior type of malting barley.

Good malting barleys are so essential that big malting concerns build and maintain large capacities for cleaning and storage so that they can lay in abundant stocks when the supply is available and the market price advantageous.

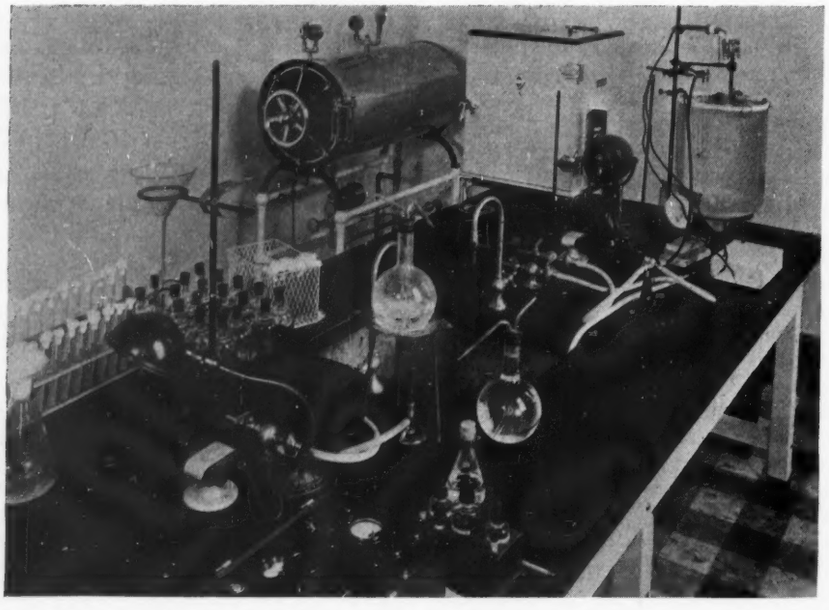
Even in the selected varieties of barley there are variations in malting qualities because of differences in geographical origin and in the soil or climatic conditions under which the barley is grown. These variations are of such permanent and organic character that, preliminary to the production of high-quality malt, the barleys used must be separately cleaned, graded, stored and malted on the basis of geographical origin as well as of individual variety.

Special attention is given to cleaning and grading to free the barley from undesirable substances and to obtain kernels of as nearly the same size and malting properties as possible. This grading is physical in character and is carried out by mechanical means. It is done as the barley passes from the shipping car to the storage bin and may consist of as many as three steps: scalping, cleaning and grading.

Grain breakage or cracking is kept as low as possible by the use of an automatic car unloader, belt conveyors and bucket elevators to transfer the barley from the shipping car to the garner at the top of the workhouse directly over the hopper scale. The hopper scale may deliver the grain to the scalpers or to the cleaners for separation of chaff, broken kernels and foreign seeds before it goes to the graders for classification into grades



Accurate determination of the weight of the barley is one of many raw-material tests made by the malt manufacturer in controlling quality.



Array of scientific instruments used in the laboratory to control and test the quality of malt.

Scientists in the laboratory guide processing procedure in successful control of malt quality.

▶ **QUALITY CONTROL** ***in the manufacture of malt involves mechanical, biological and chemical problems. How these problems are solved in a modern malting plant, as described in this article, is important to users as well as makers of malt, including manufacturers of such products as***

Bakery Products
Beer
Breakfast Foods
Confectionery
Malt
Malt Extract
Malted Milk
Syrups
Vinegar

according to kernel size. This cleaned barley is transferred to concrete storage tanks. The cleanout is sold as cattle or poultry feed.

In order that a bright, well cleaned barley may keep its good malting qualities, its moisture content should not exceed 14 per cent. The bin temperature should not exceed 70 deg. F., and the barley should be transferred from one bin to another as often as necessary to avoid heating and mustiness.

In the malting of barley, such factors as (*a*) time of storage, (*b*) degree of aeration, (*c*) moisture content, (*d*) germination energy and capacity and (*e*) drying conditions must be varied in accordance with the variety of barley used, the geographical origin of the grain and the size of the kernels.

When the barley is to be malted, it is transferred by screw conveyors and spouts via scale hopper from the storage bins to large vats in the malt house. It is steeped in water in the ratio of 1 part of barley to 1½ parts of water at 60 deg. F. for 48 hours. The water is changed several times during the steeping process to wash and clean the barley thoroughly.

At the end of the steeping operation, the barley has a moisture content of 45 per cent and is dropped to the germinating compartments, to be held there for six to seven days at 60-62 deg. F. As germination progresses, a sprout or root growth develops at the embryo or germ end of the kernel until from four to six rootlets are formed. Beneath the hull of the kernel a narrow sheath, or acrospire, is formed and grows toward the opposite end of the kernel.

The sprouting continues until the hard, starchy barley kernels become mellow, due to the starch being modified by enzyme action. A partial breakdown of the barley proteins also occurs at this time. These changes are the result of enzyme development and activation, essential to successful mashing operations in the brewery. Temperature and moisture conditions under which sprouting occurs are very important factors in determining the rate and quantity of enzyme development. These two factors are controlled by proper humidification and cooling of the air and by sprinkling.

When the sprouting has progressed until the acrospire is well developed, the enzyme content of the barley kernel has reached a maximum, and starch modification has attained a satisfactory level. Then germination is terminated by the application of heat, and the green malt is transferred by screw conveyors to the drying kilns where it is spread upon the the perforated floor of the upper kiln. Here it is turned every eight hours for a 24-hour period by traveling, slow-turning, propeller-type agitators known as helices. Heated air is drawn through the floor perforations and through the layer of green malt. At the end of 24 hours, the partially dried malt is dropped to a second perforated floor of the kiln for a second 24-hour drying period to complete the drying operation. At the end of this second drying period, the moisture content of the malt is 4 per cent.

From the drying kilns, the malt is transferred to storage tanks where it passes through a mellowing period of several weeks. After the mellowing period, the malt is cleaned of sprouts and is ready for shipment.

Laboratory control is exercised throughout the malting process. The barley being considered for malting is tested for (*a*) presence of kernels damaged by disease, weathering, threshing and heating or mildewing during storage, (*b*) color, (*c*) uniformity of size and shape, (*d*) presence of varietal mixtures and foreign seeds or substances, (*e*) test weight per bushel, (*f*) moisture, (*g*) protein content, (*h*) maturity and (*i*) germination energy and capacity.

The finished malt is tested for (*a*) bushel and 1,000-kernel weights, (*b*) degree of growth, (*c*) mealiness, (*d*) presence of foreign substances or mold, (*e*) kernel size, (*f*) moisture, (*g*) degree of extraction, (*h*) time required for inversion, (*i*) odor of mash, (*j*) color of wort, (*k*) degree of wort clarity, (*l*) speed of filtration, (*m*) pH of wort, (*n*) diastatic power, (*o*) proteolytic power, (*p*) soluble protein of wort and total protein of malt, and (*q*) other special tests peculiar to the industry served.

Laboratory tests of the barley before it is placed in process serve as indicators as to how the malting procedure is to be carried out to obtain the desired quality in the finished malt. Check tests on the finished product testify as to how well the proper controls were applied during the malting process.

The use of barley malt finds a place in many industries. It is used in the manufacture of beer, distilled liquors, candy, malted milk, pastries, breakfast foods, bread, leather, medicines, chemicals, textiles and paper (FOOD INDUSTRIES, August, 1936, page 397). The method of malting is governed by the particular need the malt is intended to fill.

ZIPPER SAUSAGE *Has More*

New casing increases production capacity 600 per cent

By FRANK WETTERLING
President, Wetterling, Inc., Milwaukee, Wis.

▶ ***New packaging developments have long been regarded as aids to merchandising, but frequently they involve an increase in production costs. Because the packaging development discussed in this article lowered production costs, while increasing sales, it should be of interest to***

All Food Executives and Engineers

For stuffing the vegetable-parchment "zipper" casings, standard equipment is used. One worker per stuffer gang-ties the open ends for hanging full-length on smoke-sticks.

MUCH HAS BEEN MADE from a merchandising point of view of the wiener in the "zipper" casing. An equal amount of "noise" could have been made about this packaging development from a production angle—if shouting about the production benefits could have been converted into public wiener-buying interest. Adoption of this zipper casing has solved as much of a production problem for us as it has contributed to the merchandising program for our wieners and frankfurters.

We are in the wholesale meat business and make a varied line of sausages of the wiener and frankfurter types. Like all makers of these meat items we, for some time, had been looking for some means by which we could do an aggressive merchandising job on these items. Not only did we want to hit upon some feature which we could emphasize in an advertising and selling campaign, but we wanted to identify definitely certain wieners and frankfurters as being of our making and of a vouched-for quality. And we wanted to do this without a capital investment that would eat up all the advantages gained from a merchandising program to expand our market.

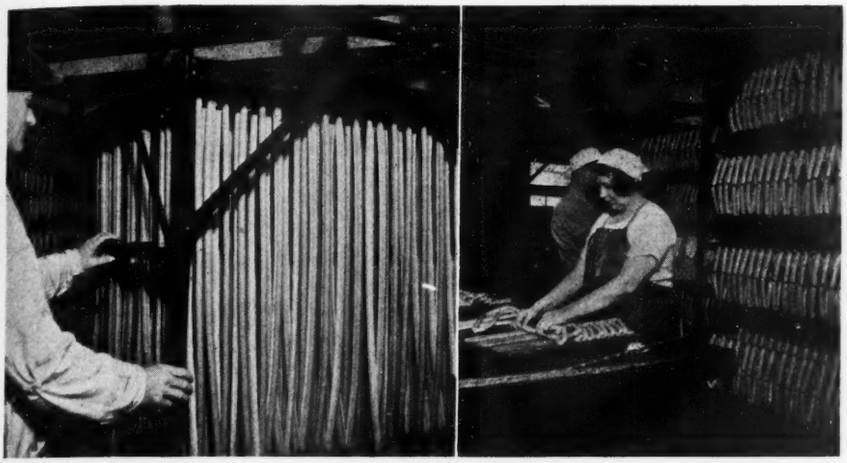
A 600 per cent increase in sales on all our wiener and frankfurter business during the first week of its adoption is direct evidence of how well the zipper casing has worked out for us in a merchandising way. It is a feature that we were able to emphasize and dramatize in retail-outlet demonstrations, and in direct-mail, point-of-sale, newspaper, radio, taxicab, streamer and recipe-folder advertising and publicity. It gave us something to talk about, and in a measure it took our wieners and frankfurters out of the staple classification sufficiently to make specialty selling possible.

So far so good. The real test of the practicability of this casing lay in our ability to supply the increased market on a uniform-quality basis and without increasing our overhead investment to the point of making our venture unprofitable. In that, we met up with a pleasant surprise. We appreciably lowered our production costs through an increase in production capacity without any addition to the production equipment or to the operating force.

First of all, no linking is necessary. That means: (1) That these casings can be filled by the same stuffing machine and operating force as other types of casings commonly used; (2) That only one girl instead of two per stuffer is required to gang-tie the open ends and prepare the lengths for hanging over smoke-sticks on overhead trolley racks; (3) That the capacities of the racks, the smokehouses, the cooking vats, and the coolers are increased as much as six times on the basis of total weight of sausage handled.

This tremendous increase in production capacity without increase in capital investment is not the only advantage gained from the plant-operation standpoint. There is a saving of approximately 1 in. of casing for each wiener through the elimination of linking. This saving offsets the approximate 3.5 per cent trimming shrinkage. And since these wieners and frankfurters are sold with the casings on, a labor saving of approximately one-half cent per pound is made there over the skinless variety, from which the casings are removed before packaging. In the cost of the casing itself, there is no saving in purchase price over transparent-cellulose casings, although the saving over the price of natural casings amounts to

Than Sales Appeal



Overhead-trolley rack carries approximately six times the weight of sausage in full-length casings (left) that it does in linked casings (right). This six-fold weight factor carries on through remaining production areas to increase department production capacity without increase in investment cost or operating force.

Preparatory to packing in 5-lb. cartons, the smoked and cooled full-length sausages are placed in a miter box. Then they are cut with a sharp knife into uniform lengths having even ends. There are twelve of the cut lengths to the pound.

more than 60 per cent. There is, however, a reduction of 3 to 4 per cent in the number of reworks caused by breaks in casings and irregular linking.

To package the zipper wiener requires about one-fourth the time for linked goods. Dozen lots of the full-length chilled sausages are transferred from the trolley racks to a miter box scored to give even lengths, where they are cut by an operator with a sharp knife. Then, instead of being put into cartons individually, as is done usually in the case of linked or skinned wieners, they are packed by the handful, twelve cut lengths to the pound, by a girl packer. Trimming shrinkage consists merely of the two short, string-tied ends for each 36 to 40-in. length of zipper casing. At present, these wieners and frankfurters are being packed in 5-lb. wholesale cartons.

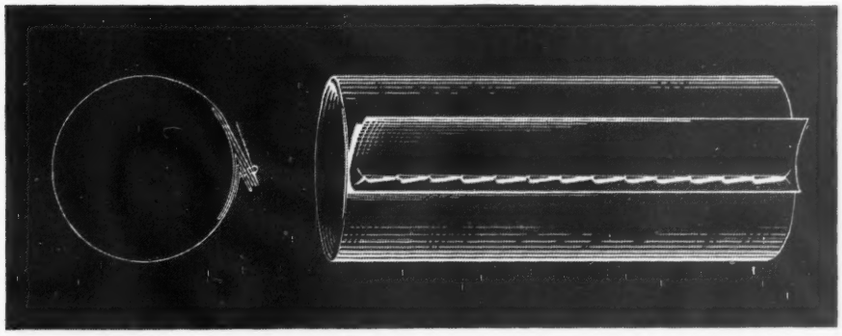
In this way these parchment casings have made possible a 600 per cent increase in production capacity of our sausage department without increase in capital or operating expense, a 3 to 4 per cent saving in rework of breaks or cripples, a 60 per cent saving in casing cost over natural casings, a half cent per pound saving in skinning expense and a 75 per cent saving in packing time and labor. All of which go hand in glove with the 600 per cent sales increase which the marketing advantages of the zipper-cased sausage gave us.

The zipper casing is a flexible, but not extensible or expandable, tube of vegetable parchment with a patented folded-and-sewed seam, the tube being closed at one end. The "tab" which runs along and covers this seam is positioned so that it can be seized between the thumb and first finger of the hand and pulled while the stuffed portion of the casing is held in the other hand to "zip" or rip off the seamed portion of the casing, leaving the body of the casing free for easy removal.

The casing tube is made in 25, 22, 20 and 18 mm. diameters and in the length desired. We use the 37¼-in. length.

Like natural casings, these parchment casings are water-soaked preparatory to being slipped onto the stuffing horn. They are placed on the horn in the regular manner and are pushed off by the pressure from the stuffer, as are other casings.

During smoking, the casing permits penetration and development of the flavor and color characteristic of smoked sausages. As is customery with other casing materials, the time of smoking varies with the sausage. Following the smoke, the full-length sausages are cooked in 160-deg. F. water for approximately six minutes, run under a cold-water shower for about three minutes, and room cooled for about 30 minutes. Then they go into a refrigerated room preparatory to cutting and packing.

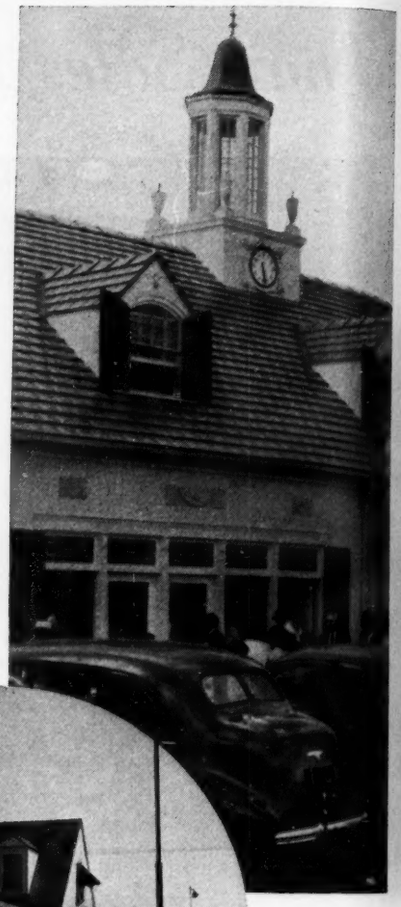


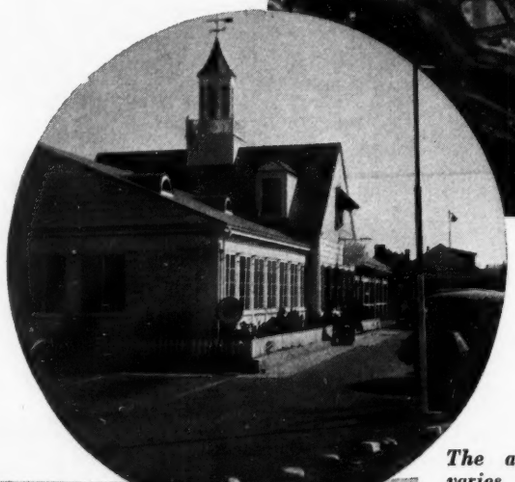
How zipper casing is constructed. End view shows that it consists of a tube of vegetable parchment with a folded-and-sewed seam. Inside of the seam is a folded strip which reinforces the seam and makes it tight, this strip being held in place by the stitching. Top view of casing shows stitching and folded-over strip of parchment, or "tab", which is grasped between fingers for zipping the casing open.

Here's a NEW MARKET for Foods

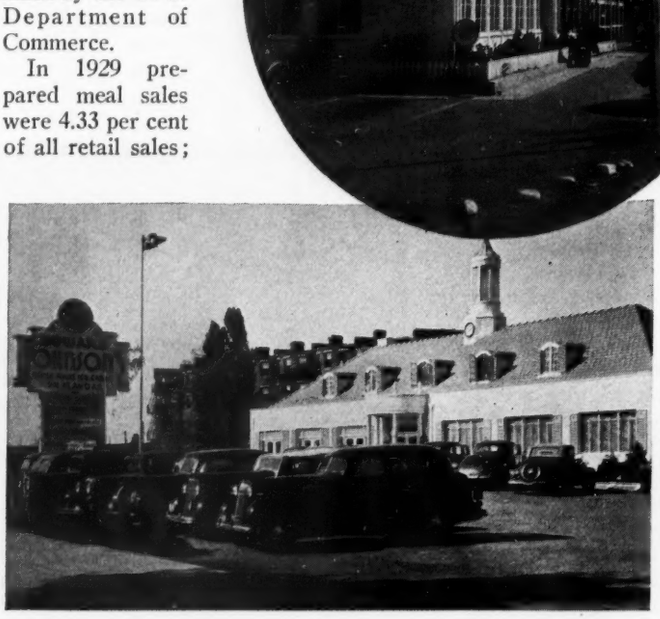
America-On-Wheels forces growth of restaurant eating, increases institutional sales

By IVAN C. MILLER
Distribution Editor,
FOOD INDUSTRIES





The architecture varies but the Johnson stand is unmistakable.



Though not far from the business center of Boston, this stand on Commonwealth Avenue is on a through highway.

IN THE DAYS of Frederick the Great, it was true that armies and serpents traveled on their bellies. Today it is equally true that a large part of America travels on its belly. The numerous gas stations dotting the highways are little if any more important to roving America than the equally numerous roadside stands.

Not so very long ago, cooking was done at home; more recently food manufacturers took much of the drudgery out of homecooking making it possible for the housewife to open and serve what the food manufacturer had cooked and prepared. But America is never satisfied. America has a new toy, the automobile—and good roads on which to enjoy the new toy. America is on the "go" and there is less time spent at home now even for home eating.

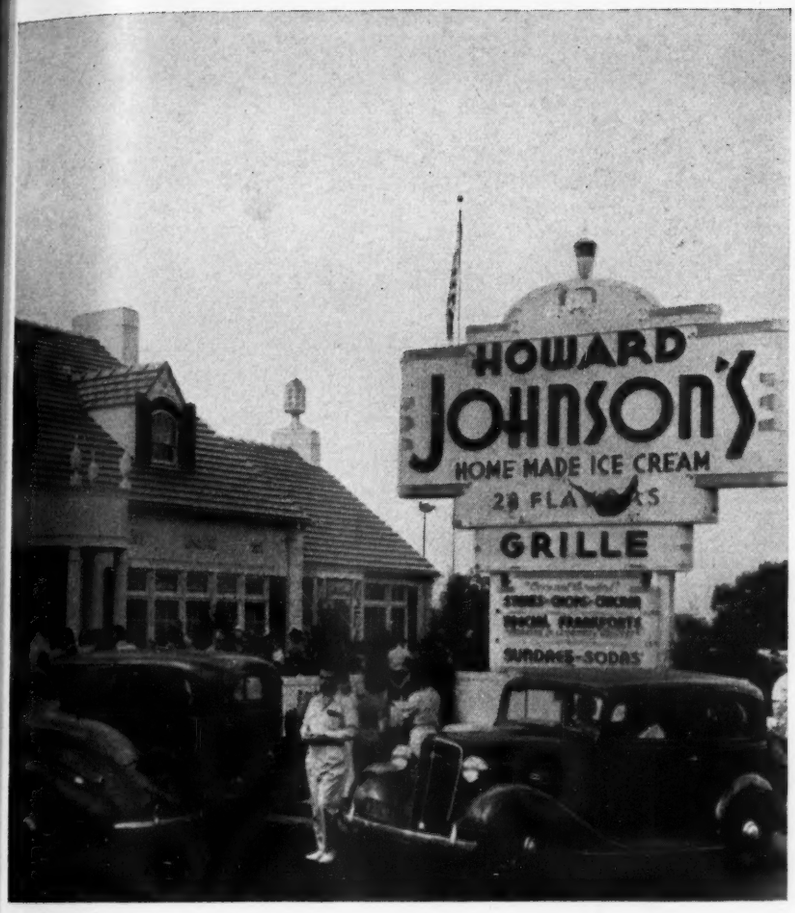
All sales through retail food stores in 1929 were approximately 11 billion dollars. Sales of food in restaurants and eating places were approximately two billion dollars. That is, 83.7 per cent of our food expenditure was made for food to be cooked at home and 16.3 per cent for restaurant foods. By 1935, regardless of the depression, we were spending 22.2 per cent of our food dollar for meals away from home and only 77.8 per cent for meals at home.

In the two years following 1935 grocery store sales (excepting through chains) increased 13.8 per cent, chain sales increased 6.5 per cent. Meat market sales increased 13.1 per cent, but food sales through restaurants and eating places increased 24.3 per cent, (not including food sales in drinking places). These figures are taken from the Census Survey of Business, 1937–38, made by the U. S. Department of Commerce.

In 1929 prepared meal sales were 4.33 per cent of all retail sales; by 1935 they were 7.21 per cent of all retail sales. The foregoing figures would indicate a 1939 market of more than $3,000,000,000.

How much the trend toward eating out can be credited to the automobile cannot be statistically determined. Though automobiles have

Food DISTRIBUTION



Day or night when the stands are open, cars of patrons are parked around the stands. This stand is near Mineola, Long Island.

increased 600 per cent in the last twenty years, the sales of restaurants are not reported for twenty years ago. There is evidence, however, that the automobile is taking eating out of the home and scattering it along the highways in roadside stands as well as among city restaurants.

Less than ten years ago the motorist on a business trip or on pleasure bent took pot luck in the bigger cities as he traveled along the country's highways, or paid the price of the best hotels. The "greasy spoon" was the only choice in most of the country villages. Hot dogs were the only fare at the roadside stands and none too good fare in its class. Inferior food, carelessly served, was the lot of the motorist. *Caveat emptor* applied because the motorist never returned.

This is not true in New England today, where a $20,000,000 business has been built on the principle that "consumers will pay for quality."

Less than ten years ago Howard Johnson built the first "Howard Johnson" roadside stand, in New England, just outside of Boston. Ice cream and dairy products were the stock in trade on which the business was started. The hot dog, quite glorified, was an early addition. Today there are a hundred Howard Johnson "stands" along the main highways of New England from Maine to Long Island, where the motorist is certain to get refreshments or meals of uniform quality, expertly served in surroundings that compare well with the best city hotels.

Although these "stands" were originally planned as ice cream and dairy lunch stands, they are now large highway restaurants with seating capacities ranging from 50 to 600. Today the Howard Johnson stands are divided into two sections—the service side where meals are served at tables, and the milk bar side where ice cream, confections and sandwiches are served over a counter.

Although the volume of sales of the dairy products departments of these stands will gross near $5,000,000 per year, the restaurant side of the stand now account for about 75 per cent of total sales.

Each Johnson stand, well landscape gardened, is set back from the highway, but so located as to be visible from the highway a considerable distance in each direction. Ample parking space surrounds each stand to accommodate the cars of patrons.

Johnson restaurants have the atmosphere of the better city hotel dining rooms.

On week ends and holidays the dairy section of the stands do a rushing business.

These stands do not, however, depend entirely on transient tourists. More than 90 per cent of them are open all year and the rest are open more than six months of the year.

A large portion of the patronage of Johnson's stands is local and permament. Johnson's stands, though located on main highways, are generally near or in the outskirts of cities, whose residents provide the stands with a substantial portion of total patronage the year round.

There are reasons why these stands have grown from a single roadside ice cream "parlor" to highly patronized highway restaurants, serving meals which range in price from as low as 40 cents to as high as $1.50.

This business was built on the belief that people, whether eating at home or in public, want well-prepared quality food and will pay a fair price to obtain it, that they want, in public eating places, efficient and courteous service and that they want to eat in a clean, attractive dining room, and furthermore that they will, if necessary, pay a premium to eat in pleasant surroundings.

Each Johnson stand is the brain child of the company's architects. No two are alike, yet the family resemblance is unmistakable. It is a source of real satisfaction to the traveler who has eaten in a Johnson stand to see ahead as meal-hour comes near, one of the well groomed, white walled, red roofed oases.

Though the exteriors vary, the interiors are much alike. The milk bar section varies little except in arrangement of equipment. All but a few dining rooms are finished in soft natural wood; tables and chairs show the most variation. The furnishings and interior decorating are modern and attractive. The kitchens are equipped with efficient sanitary implements.

Efficient service is rarely an accident. It is purchased at a premium. In the Johnson stands trained women are employed as cooks, pastry cooks and dietitians. Waitresses are graduates of the company's own training school.

Dairy products, frankfurters and a few other items, mostly those sold over the milk bar, are purchased by each stand direct from the parent company. The bulk of the foods served in the restaurant are purchased from the local market by each individual stand, but the standard of quality must measure up to the standards set and required by the parent company.

Each Johnson stand represents a considerable capital investment in land, building and equipment, and a sizable daily operating investment in trained personnel and quality foods. The result is a constant flow of patronage from six or seven in the morning to one or two at night, a flow which keeps the restaurant full most of the hours of the day or night. The heavy patronage permits prices in line with the quality of the setting and with the quality of the foods. Liquor is served in not more than 5 per cent of the stands.

Interior finish used in the service section of Johnson restaurants is mostly in natural wood.

The corporate and management structure of this group of glorified roadside stands has several features which should be of interest to groups in the food field. The Howard Johnson organization is not of the corporate chain structure. More than 90 per cent of the units are independently owned and operated, under franchise. The management structure resembles that of the voluntaries in the retail food field, with, however, a much more stringent control of methods, policy and quality. The self-policing of the units is by nature cooperative.

Periodically a rotating group of owners visit all stands in the group, observing, criticizing, policing. If one stand in the group discovers an improved method, it is observed and may be adopted by the rest of the group. On the other hand, if one in the group drops below standard in appearance, character of service or quality of food, customers may be lost for all the remaining members of the group. The continued success of this type of enterprise depends on the fact that the standard of quality and service is the same in every stand.

This is true also in the food field. If a few brands of frozen foods fall in quality below the standards already established, the injury reaches beyond those whose products were lowered in quality. It is not necessary for all bakers to lower quality to bring about a reduced per capita consumption of baker's bread. A surprisingly small number can influence this trend. This influence of the minority is true throughout the food field.

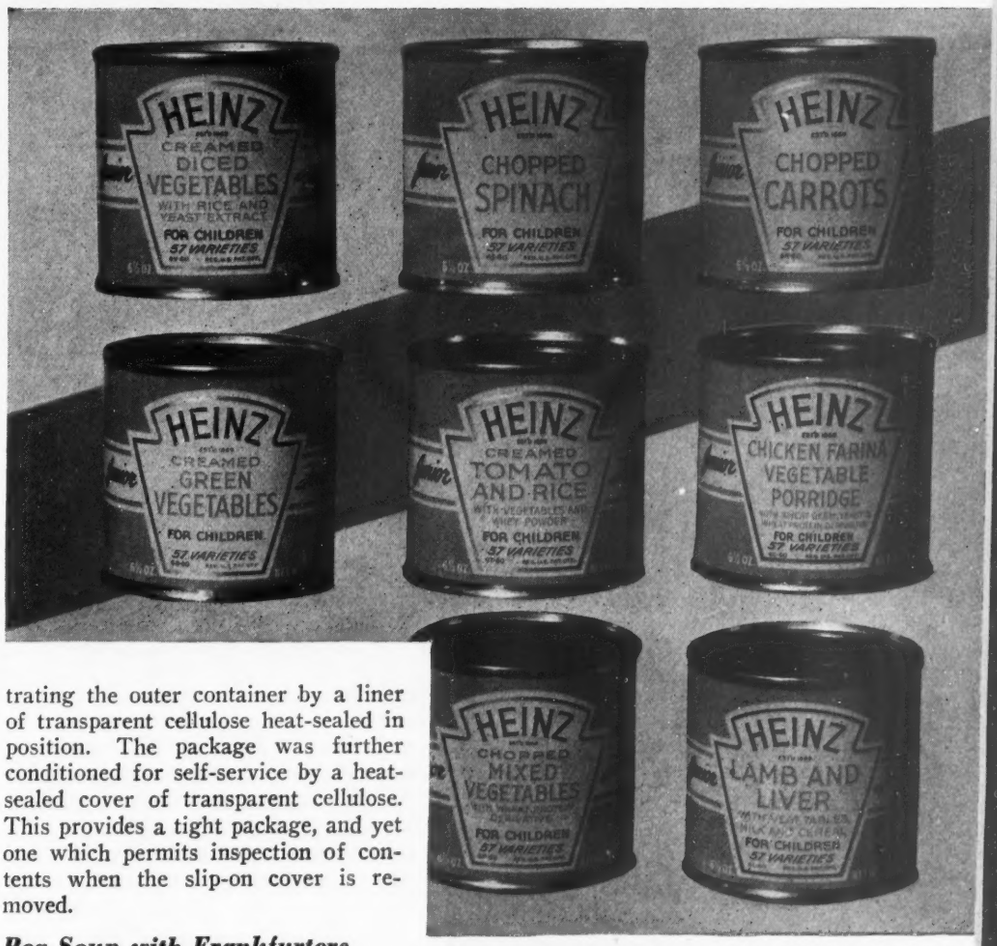
During 1938 Johnson stands expanded into a new state, New York. During 1939 stands will be opened along the route from New York City to Baltimore and also in Florida. The expansion of the Johnson stands has been rapid during the last few years. The expansion could have been manyfold. Tourist and business travelers to New England from all parts of the country have recognized the need for similar highway restaurants near their own communities. There have been many requests from every state for franchises. Company policy however prohibits such wholesale widespread expansion. The policy permits no expansion which jeopardizes the company's ability to exercise adequate control over the quality of food and standard of operations in every unit.

The rapid growth of the Johnson stands not only reflects a trend from home cooking to restaurant eating, it not only indicates that "consumers will pay for quality," but it also foreshadows the growth of this type of institution along all the 400,000 miles of hard-surfaced highways in the country, where they will be available to all the 30,000,000 car drivers and their families. The institutional market, particularly the quality institutional market, threatens to catch up with the consumer market. It is a market that will bear careful watching by the food manufacturer.

New Packages & Products

Baby Foods Market Explored

FOOD MANUFACTURERS have already discovered the market possibilities of specially prepared food products for infants under one year of age. According to United States Census figures, although almost 2 per cent or over two million of the total population is under one year of age, there are 7½ per cent or over nine million consumers between the ages of one to five. The market for specially prepared foods for children from one to five is fertile with possibilities. When mother can obtain a serving or two of foods, especially prepared for the youngster from one to six, the family need not always eat baby food nor need the youngsters face the highly seasoned range of foods preferred by adults. H. J. Heinz Co., Pittsburgh, Pa., bids for a part of this market with a new line of "Junior Foods." Heinz junior foods are packaged in eight varieties: chicken farina vegetable porridge, chopped mixed vegetables, lamb and liver, creamed diced vegetables, creamed green vegetables, chopped spinach, creamed tomato and rice, and chopped carrots.



Doubly Improved Package

ATMORE & SON, INC., Philadelphia, Pa., who recently redesigned its 1 lb. container of "Extra Family Mince Meat" accomplished two objectives. The package was redesigned first to prevent the liquid from penetrating the original container, and second to adapt it for rapid turn-over in self-service stores. The moisture in the mince meat was prevented from penetrating the outer container by a liner of transparent cellulose heat-sealed in position. The package was further conditioned for self-service by a heat-sealed cover of transparent cellulose. This provides a tight package, and yet one which permits inspection of contents when the slip-on cover is removed.

Pea Soup with Frankfurters

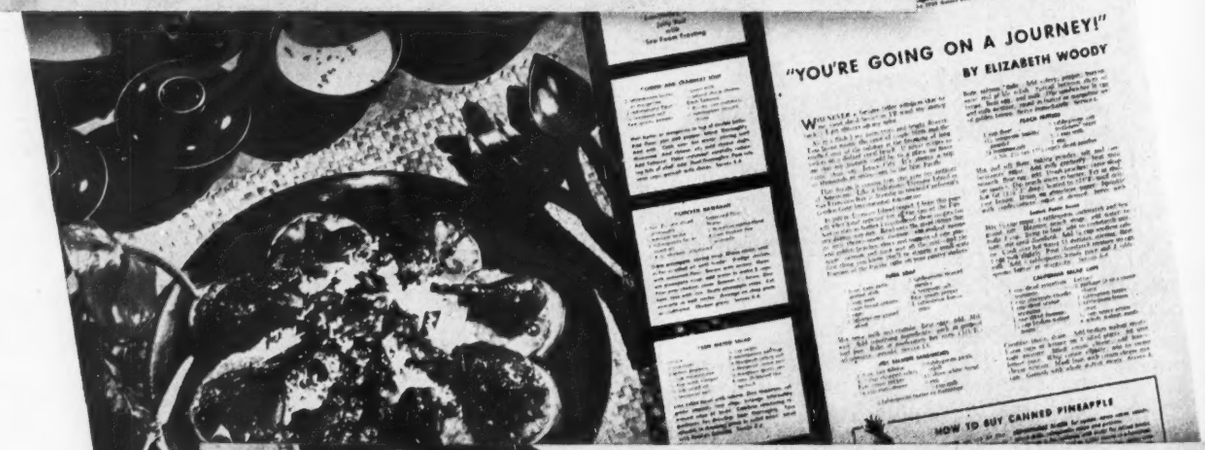
STAHL-MEYER, INC., New York City meat packer, has accomplished two objectives with the introduction of its new product, "Pea Soup with Sliced Frankfurters." Both are significant. Stahl-Meyer, Inc., in line with a trend among food manufacturers to avoid placing too many eggs in one basket, has added to its line not only a new product, but also what is for them a new type product. This new product not only opens a new market, but provides an additional outlet for an old product, frankfurters.

Food DISTRIBUTION

These Posters Will

March food pages in Ladies' Home Journal.

McCall's food features in March.



Food DISTRIBUTION

Full color spread for March Women's Home Companion.

Promote Profits

Results from surveys show increased sales for manufacturers' products in those retail stores displaying posters reprinted from the food pages of women's magazines

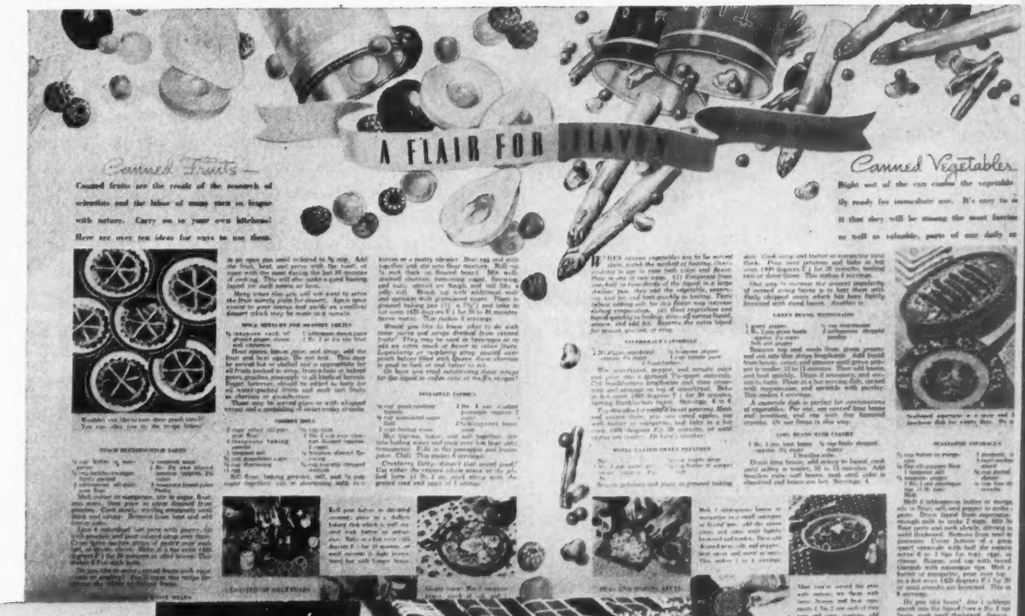
Good Housekeeping: Full color spread illustrating Lenten dishes suitable for promoting sale of cheese and canned or frozen shrimp, chocolate and cake-making ingredients.

Ladies' Home Journal: Full color spread which may be used for stimulating sale of canned salmon, canned or frozen apricots, peas, onions and mushrooms and ingredients for making cake and muffins.

McCall's: Full color spread to promote sale of canned pineapple, crabmeat, cheese, rice, ham and cake-making ingredients.

Pictorial Review-Delineator: Two color spread which may be used to stimulate sale of canned fruits and vegetables.

Woman's Home Companion: Full color spread for use in increasing sale of frozen or canned fish, fruits and vegetables.



Proof of food pages from March Pictorial Review-Delineator.

Good Housekeeping features these food pages in March.

Merchandising Hints

AND HURDLES

Only a Few Days Left

IN past years, food manufacturers have taken many of the Irwin D. Wolf awards in the annual competition sponsored by the American Management Association. Improved packaging has extended the life and raised the standard of many food products. Better packaging should be encouraged—the competition is worthy of the support of food manufacturers. The last day for entry in the annual competition is Feb. 8. Get entry forms from Irwin D. Wolf Awards Administration, 232 Madison Ave., New York, N. Y. Send entries and packages to Irwin D. Wolf Awards, Room 300, Empire State Bldg., New York, N. Y., to arrive before Feb. 8.

Dead Line June 24

THE TEXT of the revised regulations under the food, drug and cosmetic act, were made public in the Federal Register just before the end of the year. The regulation had been signed by Secretary Wallace earlier in the month, and will become effective June 24. The revised regulations contain a number of important alterations, most of which were made as a result of hearings held Nov. 17 and 18.

Chief among these changes are those in sections dealing with the principal display label. The display panel section, as altered in the final draft of the regulation, provides that the information required on a label may lack the prominence demanded by law by reason among others, of the following provisions: 1. Failure to appear on the panel of the label which is presented or displayed under usual conditions as purchased; 2. Failure to appear on two or more parts if each has sufficient space and is likely to be displayed; 3. Failure of the label to extend over the area available on the package to provide sufficient space for prominent placing; 4. Insufficiency of space resulting from the use of material not required by law; 5. Insufficiency of space resulting from materially greater conspicuousness of a non-required matter; 6. By meaning in small type or crowded or concealed by ornamentation or otherwise. No allowance for exemption from the labeling requirements will be given on the ground of insufficient space due to the use of a foreign language.

Secretary Wallace in a statement issued with his signature, on the regulations, says that the changes are made so as to make the regulations more workable from the position of industry, without any corresponding loss in consumer protection. He also pointed out that due to consumer protests, no alteration has been made in section 403 (i) which requires the disclosure of ingredients in foods or in exemption of small packages from the requirements that contents be disclosed.

It will be reasonable to consider label changes between now and June 29, remembering, however, that many changes will follow and that many provisions of the law have yet to be clarified. Looks like an entire overhaul job may be necessary.

Food Freezers for the Home

THERE HAS BEEN a persistent rumor that several mechanical refrigerator manufacturers are designing a mechanical unit for freezing and storing frozen foods in the home. Frigidaire Division of General Motors Corporation has designed such a food cabinet to sell at a price range comparable to that of mechanical household refrigerators. Frigidaire hopes to find its first market for this home freezer among sportsmen for the freezing and storage of game.

One-Piece Frozen Food Container

THE NATIONAL SEA FOODS CO., Galveston, Tex., has recently adopted a one-piece folding box for packaging frozen shrimp, crabmeat and fresh fillets for the institutional trade. The box and lid are cut in a single piece from heavy waxed paperboard, creased, folded and stapled to lie flat and occupy the minimum space in shipment and storage before packing. When filled the frozen products force the sides and ends of the container into box shape over which the attached lid then fits.

One-piece container introduced by National Sea Foods Co. for frozen foods.

Profits Depend on Resales

THE POMPTON AVE. WHITE EGG FARM, Cedar Grove, N. J., insures the proper roasting of a turkey by including minute instructions with each bird, setting forth the proper temperature and time for cooking and detailed instructions for arranging the bird in the pan and basting.

It is not enough to make a good product. Too many good food products are ruined by careless or ignorant cooks. Our grandmothers took the raw materials of the farm and with a pinch of salt and no little sorcery, prepared tempting dishes for the table. Today the food manufacturer is our cook. We heat and garnish what he has prepared, often spoiling an otherwise tasty product. One of the easiest ways to insure tasty dishes is for the food manufacturer to provide ample instructions with his product for preparing these dishes.

No 44-hours for Execs.

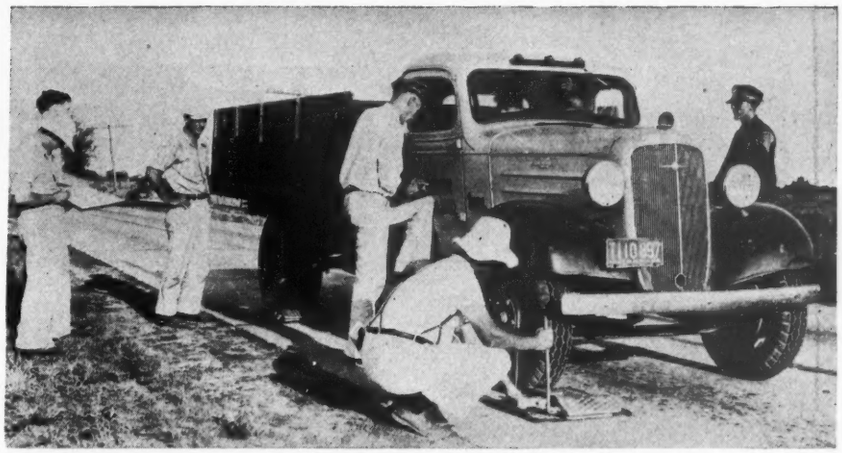
A TOTAL of 23,843 advertisements, almost 20 per cent of the 129,075 examined during the year ending June 30, 1938, was "noted as containing allegations that appear to be false or misleading," according to statement made in the report of the Federal Trade Commission covering its work for the last fiscal year, under the Wheeler-Lea Act. This work included investigation of advertisements in newspapers, magazines and by radio broadcasting, by a special board of investigation designated since 1929 as the "Radio and Promotion Periodical Division."

The advertisements containing alleged objectionable matter formed the basis for 2,688 prospective cases. A total of 22,959 radio broadcasts were marked for further study as containing representations which may have been false or misleading. These formed the basis for 1,544 new prospective cases.

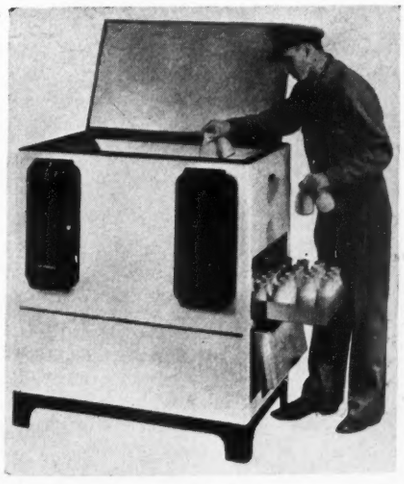
In eleven cases the F.T.C. recommended complaints be issued without permitting the advertiser opportunity to stipulate. This was done because the material to which objection was taken was held to contain gross deception or be dangerous to the public.

In reaching determination in matters of scientific opinion, the F.T.C. board consults the Bureau of Standards, the Food and Drug Administration, the U.S. Public Health Service, the Bureaus of Home Economics and Animal Industries, Department of Agriculture, and other government agencies.

Looks like the management of those companies with advertised products will do a bit of night work. Isn't it lucky the 44-hour regulation does not apply to them?



Weighing truck wheel loads, one method by which tariff barriers can be erected between states, camouflaged as highway inspection.



Available now to dairies is a new milk vending machine which delivers a cold pint of milk in response to the deposit of a nickel in the slot. With the growing interest of industrialists in improved industrial relations and the realization that refreshments just before the fatigue hours reduce accidents and labor insurance costs, the milk vending machine may prove useful to the dairies in developing new and profitable markets in industrial plants and offices.

Local Trade Barriers Must Go

THE HEALTH REGULATIONS of both Chicago and Chicago suburbs are supposed to conform to the United States Public Health Service Standard Milk Ordinance and Code. The Health Commissioners of Evanston, Winnetka and 30 other north shore and west side suburbs of Chicago, have ruled that paper containers meet all sanitary requirements and may be used for the distribution of milk in these suburbs but paper milk containers are barred from Chicago by Board of Health regulations set up under the 1935 milk ordinance. According to the city health officials of Chicago, these regulations limit milk containers to glass, metal or any other non-porous, non-corrosive material.

The Borden-Wieland and Bowman Dairy Companies are now using waxed cardboard cartons for the first time to meet competition provided when the Dean Milk Co. introduced paper containers into the suburbs of Chicago. The paper container will not, however, be used by these companies within the city limits.

Regardless of the respective merits of glass and paper milk containers, the legal interpretation of the United States Public Health Service Standard Milk Ordinance and Code should be clarified. If the Chicago situation is the result of an attempt to raise a municipal trade barrier, camouflaged, even though it appears to benefit a few local manufacturers, it should be condemned by those benefited as well as all other manufacturers. All such barriers are contrary to the fundamental concept of our constitution. Their use constitutes a dangerous practice which, if allowed to continue, can only result in injury to industries.

Food DISTRIBUTION

Trucks Made Attractive
To Aid Public Relations

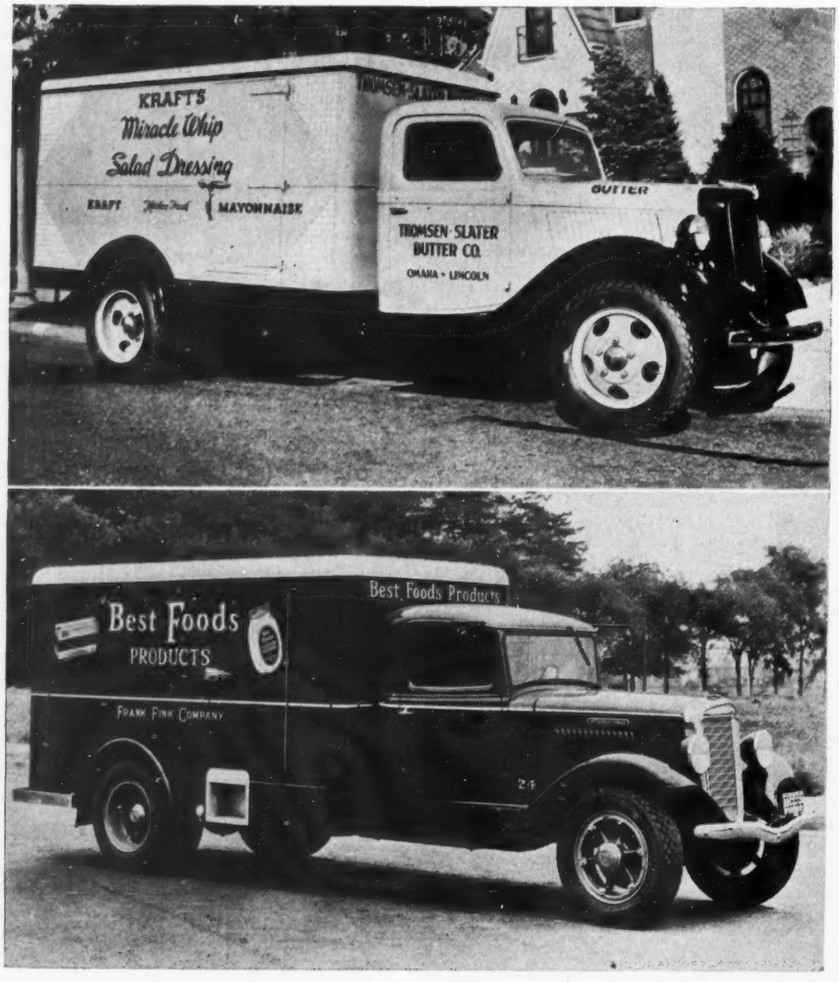
Food companies pay close attention to color, shape, design and cleanliness of vehicle bodies

CONTRIBUTING to the continued consumer acceptance of worthy food products is the appearance of the motor vehicles which transfer and distribute those products. And by appearance is meant the shape, size, proportions, color and condition of the vehicles.

It goes without saying that motor vehicles should be kept clean, appearing as they do before the public. If cleanliness is next to Godliness in personal characteristics, cleanliness and purity are just as closely associated in food products. It is this general acceptance by the consuming public of the relation between cleanliness and purity that has led many food manufacturers to paint their truck equipment in light colors—white, cream or the lighter shades of brown or grey.

The large food companies with branches and motorized equipment in the principal cities have been quick to sense this subtle association between the consumer of their products and the design, coloring and cleanliness of their delivery equipment. Further, the set-up of their delivery organizations is such as to insure uniformity in design and a like degree of maintenance by all branches. No matter in what cities or towns they are seen, their trucks bring to the minds of those people who see them the name of the food product which they distribute. If that product has general consumer acceptance, which is invariably the case, or it would not be distributed nationally, a good looking piece of delivery equipment, well painted and clean, unconsciously urges the purchase of that particular product when next the observer is in the market for that kind of food.

The same principles have been applied by the small, local food distributor located in a large city, or even in a small town. The greater



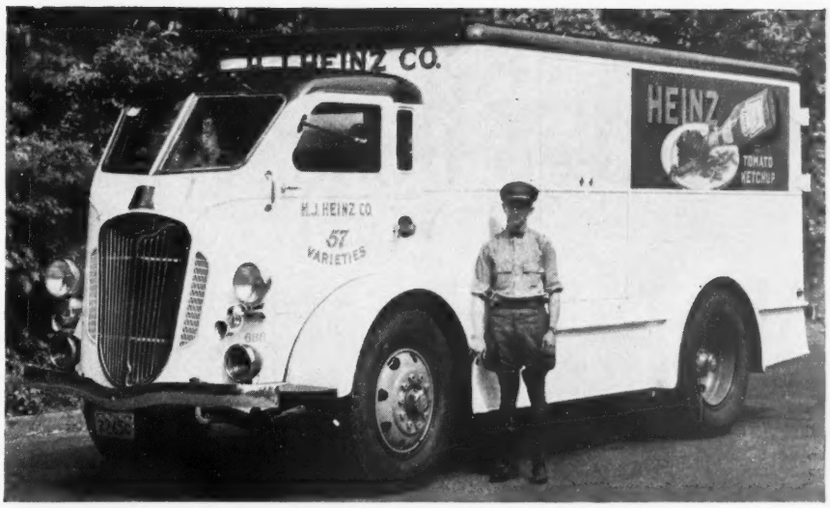
Top, Kraft standardized paint job using a light yellowish cream background with dark lettering. The truck is a Ford in the fleet of the Thomsen-Slater Butter Co., Omaha, Neb. Directly above, an exception to the general rule of painting food trucks a light color is this Best Foods distributor's truck. It is painted a rich crimson, with gold lettering. It's an International truck operated by the Frank Fink Co., Portland, Ore.

Food DISTRIBUTION

number of what we might call "exposures" of truck equipment to potential food buyers in the large city is offset to some extent by the closer personal contact of the fewer exposures in the small town. There the food distributor is more intimately known by the inhabitants and many times addressed by his first name.

As one of the outstanding examples of the application of these fundamental principles, let us take the delivery equipment of the H. J. Heinz Co., Pittsburgh, Pa., and one of whose latest pieces of equipment is shown in an accompanying illustration. It is painted snow white to suggest the purity of Heinz products and the spotless cleanliness of the plants where they are manufactured. Because white shows dirt, Heinz equipment is washed or rubbed off daily.

Note also that the figures "57" are painted prominently on the cab door to keep ever alive to public view that famous Heinz slogan about the 57 varieties. Note also that the Heinz driver is neatly uniformed to complete the mental picture of pure food products distributed by means of clean white trucks.



An excellent example of good looking food trucks painted white are the new cab-over-engine Autocars of H. J. Heinz Co., Pittsburgh. Note the use of the upper rear side-panel for poster advertising and the prominent display of the famous Heinz slogan "57 varieties" on the cab door. The neat driver's uniform is in keeping with the impression of purity and cleanliness created by the truck.

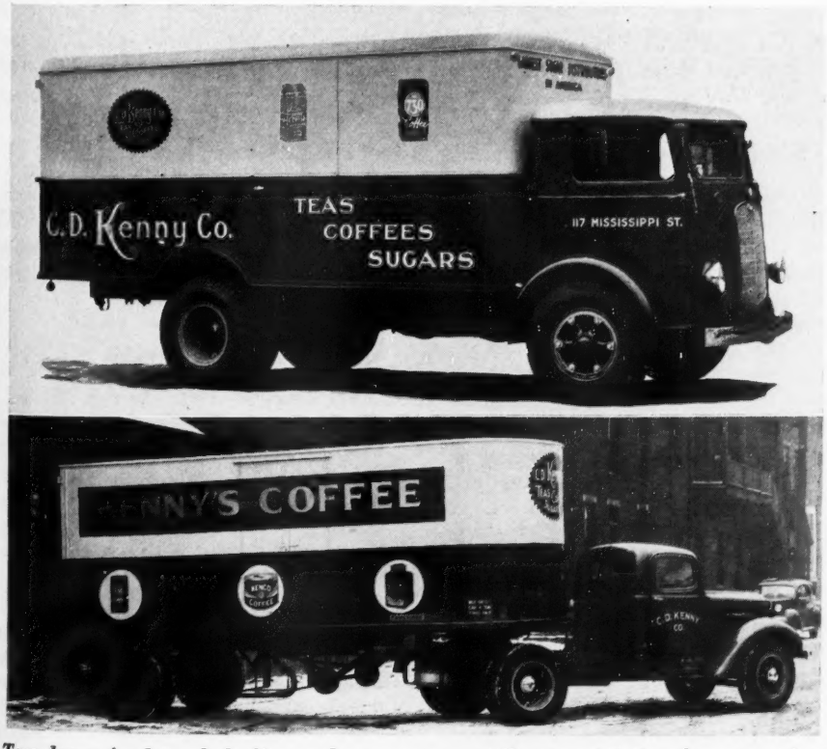
Next take a look at one of the standardized truck bodies used for the distribution of Kraft cheese and mayonnaise, as illustrated in this article. This body is featured by its light yellow cream color and the familiar blue and white gingham triangular corners on the body sides. Even though this truck is owned by a Kraft distributor in Omaha and Lincoln, Neb., it has the same standardized body color and lettering as trucks delivering Kraft products in San Francisco and Boston.

Furthermore, the body color, kind of letters and lettering layout are the same as on Kraft packages. This ties up the Kraft goods with the trucks which distribute them.

The Best Foods truck shown in an accompanying illustration is an exception to the rule in so far as color is concerned. Instead of a light color, a dark crimson paint is used as a body finish, with gold lettering and "decals" of two of the Best Foods items, Nucoa and mayonnaise. The painting and lettering of the trucks of all Best Foods distributors is standardized as shown.

The accompanying two views of a truck and semitrailer operated by the C. D. Kenny Co. show how large bodies painted a light color are apparently reduced in size by means of a lower belt panel painted a darker color. The upper half of each Kenny body is painted a rich cream, with the lower panel in a contrasting dark red.

The treatment of the upper half of the trailer body with one large line of lettering is superior to the treatment of the truck body. The three small "decals" on the latter are difficult to read on a moving vehicle, but no one can help but see that the trailer is carrying Kenny's coffee.



Two large food truck bodies made to appear smaller to minimize the antagonism of the average motorist to huge trucks. This is accomplished by painting the lower half of the body a darker, contrasting color. The top of the body is painted a rich cream and the lower portion a deep red. The cab-over-engine Mack at the top has an 18 ft. body and is used by the C. D. Kenny Co., Buffalo. The White Tractor and Fruehauf semitrailer shown directly above with its 25 ft. body replaced two 3-ton trucks in the service of the Kenny company in Columbus, Ohio.

Operators Tell How To Keep Food Trucks SANITARY

MOTOR VEHICLES which carry food products must be kept clean. How cleaning is best done, and how often and when, are questions to which executives in charge of food trucks must have the answers. Practices followed by companies in the field are outlined below. Also on this page are two discussions on paint shop problems.

Cleans with Hot Water

WE WASH the inside of truck bodies with cleaner and cleanser solution and rinse with cold and hot water. Cleaning is done daily before the trucks are put into service, at a time when they are idle. This daily cleaning and the use of hot water are the precautions which we take to keep the truck bodies free of mold and bacteria. Sterilizing of the bodies is done daily with the hot water, simultaneously with the cleaning. The truck bodies are constructed inside of steel and galvanized iron.—P. R. SCHEERER,, *secretary, Aldernay Dairy Co., Newark, N. J.*

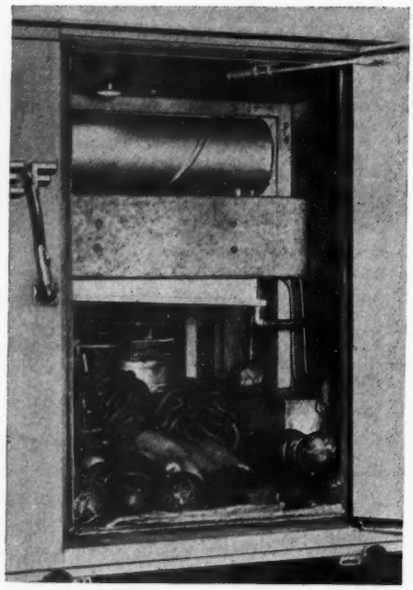
Trucks Cleaned Daily

WE CLEAN the inside of our truck bodies daily by using a regular floor push broom and hot water from a hose. The reason we clean daily is because the dirt is wet and is more easily removed while in this state than when it dries.

It happens that on our schedule our trucks are idle only about 30 minutes between the time of unloading and loading, and it is during this interim that they are cleaned. We do not sterilize the inside of the bodies.

The inside walls and ceilings of our trucks are constructed of galvanized sheet metal, while the floor is made of a "grid steel" plate ¼ in. thick.

It is to be noted that the above description pertains only to the van bodies in which we truck cases of bottled milk to our branches.—F. W. JANSSEN, *Janssen Dairy Corp., Hoboken, N. J.*



Trucks which carry food must be kept clean to protect products.

Washes Open Bodies Weekly

WE CLEAN the inside of our truck bodies by washing. The bodies should be cleaned once a week, and this is done according to a regular time schedule. It is not necessary to take the trucks out of service, as cleaning can be done on week-ends. Most of our trucks have open, stake bodies, and therefore it is needless to take any precautions to keep the bodies free from mold. Nor do we sterilize the inside of our truck bodies.—J. A. PORTER, *vice-president and assistant manager, Valley City Milling Co., Portland, Mich.*

Follows Regular Schedule

WE CLEAN the inside of our truck bodies by brushing and dusting them. The cleaning is done every week according to a regular schedule. It is not necessary to take the trucks out of service for cleaning, as this is done when the vehicles are idle.

The inside of the truck bodies is made of plywood, and the floors are of matched wood.—T. R. LEADBEATER, *traffic manager, Larsen Baking Co., Brooklyn, N. Y.*

Also pointers on paint shop operation

Two Opinions on Painting

OUR STAFF ENGINEER, F. L. Moore, believes that it is economical for a company to operate its own paint shop for commercial cars and trucks, and I agree with that. He feels that it would require twenty trucks to justify operation of a paint shop, while I believe that fifteen would do. In turn, those twenty trucks, according to Mr. Moore, would take two painters, whereas I expect that one man would be enough with a second painter on part time, this second man putting in the balance of his time on advertising painting. Neither Mr. Moore nor myself think that it is ever advisable to have paint work done on the premises by a contract painter who charges so much per job. In regard to doing body repair work in the paint shop, Mr. Moore feels that minor repairs only should be done, while I would say, do this work in the paint shop. —JOHN THIES, *manager, Accounting Service Department, Quality Bakers of America, New York, N. Y.*

Own Paint Shop Pays

WE BELIEVE it is economical for a company to operate its own paint shop for trucks and commercial cars. We think there should be at least enough trucks and cars to keep one man busy painting and touching up scratches. One man can handle a fleet of 50 to 60 trucks.

Our experience has been that it is not advisable to have paint work done on a contract basis on the premises, because the workers are not always available when they are wanted. Also, the cost is sometimes high.

Body work should not be done in the paint shop, but it is economical for a fleet owner to do his own body work whenever possible.—A. E. SINCLAIR, *general superintendent, Kingan & Co., Indianapolis, Ind.*

Food DISTRIBUTION

Food Technology

NEW DISCOVERIES & INVENTIONS

BAKING AND MILLING

How to Sterilize Flour

THE BACTERIAL FLORA in several American, Russian and Belgian flours have been examined and the results tabulated for comparison. Flour with a high bacteria count can be effectively sterilized with nitrogen oxides (electrically generated), if about 5 times as much of the gas is employed as would be needed to bleach the flour. Ammonium persulphate and potassium bromate, although they are also sterilizing agents, are less efficient than the nitrogen oxides. In general milling and baking practice, it is ordinarily not necessary to sterilize flour, provided the storage conditions are not allowed to become favorable (especially in humidity and temperature) to bacterial growth.

Digest from "Bacteriological Examination of Flour and Its Importance in Milling and Baking," by M. Soenen and R. Pinguair, *Bulletin der Anciens Eleves Ecole Francaise Meunerie*, 1938, 194 (Published in France).

BEVERAGES

Soluble Colloids in Food Liquids

IN MANY FOOD PRODUCTS the presence of water-soluble colloids is an important factor in deciding such properties as texture, consistency, drying-behavior and others. This is true of gelatin, albumen, dextrins, cane juice, syrups made from starch, and other raw materials or finished products of animal or vegetable origin.

A new method for determining the soluble colloid content of a given material makes use of 3-component solvent systems, one of the most effective being a blend of ether with 95 per cent ethyl alcohol. Thus one of the three components, namely water, is present only in a small concentration. The colloid, in dilute aqueous solution which has been brought to an accurately known acidity, is coagulated under carefully measured conditions with the 3-component solvent and the point of complete coagulation is then located on triangular coordinates.

Specified conditions of temperature, heating time, sedimentation time, filtration, washing and drying must be exactly followed so that the weight of the coagulated colloid will be accurately determined. The method is then reliable. One of its practical applications is in testing beer for its content of soluble colloids. Another is in the control of hydrolysis during the manufacture of dextrins and syrup from starch.

Digest from "Determining Soluble Colloids in Food Products," by A. V. Dumanskii and S. E. Kharin, *Tekhnologicheskie Protsessy i Kontrel Pishchevoi Industrii*, Institute for Scientific Research in Colloid Chemistry, 1938, p. 17 (Published in Russia).

Arsenic in Wine

TESTS made by the Algerian Department of Agriculture show that wine from grapes not treated with any arsenical insecticide or fungicide contains only a few hundredths of a milligram of arsenic per liter (1 mg. per liter is about 1 p.p.m.). When insoluble salts of arsenic had been used, the arsenic content of the wine rose to 0.4-0.5 mg. per liter. And, after dusting young ripening grapes with calcium arsenate, it rose sometimes as high as 5 mg. per liter. The must always contains more arsenic than the wine because about 40-45 per cent is precipitated as insoluble arsenic compounds during the alcoholic fermentation. These results indicate the degree of care needed with differently treated grapes to avoid contaminating the wine.

Digest from "Arsenic in Grape Musts and Wines," by J. H. Fabre and E. Bremond, *Annales des Falsifications et des Fraudes* 31, 149, 1938 (Published in France).

COFFEE

Coffee Extract

AN IMPROVED aromatic coffee extract is described in Swedish Patent, 92,170 (granted April 28, 1938, to P. Sylvan, Danderyd, Sweden). Finely ground roasted coffee is well aerated and the air current, carrying the aroma substances, is passed through paraffin oil to absorb these substances. The "dearomatized" coffee is then extracted with petroleum ether which dissolves oils and flavor substances, and finally with a solvent, e.g. alcohol, which dissolves flavor substances but not oils. The residual coffee, freed from aroma and flavor substances and from oils, is extracted with water in the customary way. Evaporation of the water leaves a soluble extract. Then this is combined with the aroma and flavor substances previously extracted. The new method effectively conserves the flavor and aroma of the original coffee.

Oil From Coffee Grounds Without Drying

THE OIL which can be extracted from coffee grounds is brown, with a distinct coffee odor, and partially congeals to a soft fat at or not much below room temperature. It is pasty at 15 deg. C. (59 deg. F.). Its acidity (expressed as oleic acid) is 18–22 per cent, saponification number 180–182, iodine number 75–80, acetyl number 64–73, ash content 0.15 per cent, moisture content about 1.4 per cent. The preferred solvent for extraction is trichloroethylene, but other solvents such as benzene, carbon tetrachloride and chloroform may be used.

Trichloroethylene is non-flammable, gives the best yield of oil and can be used with wet coffee grounds, thus saving the expense of drying.

A peculiar feature of the recovered coffee oil is its exceptional antifrothing power, which gives the oil at once a large sales outlet among sugar refiners. Although its drying properties are not great, the oil is potentially useful as a paint oil, after suitable treatment to increase drying power. Carrying the economy of waste material utilization even further, the residue left after extracting the oil from coffee grounds has been found to be useful in briquetting fuels, and as a binder in other products.

Digest from "Utilization of Oil From Coffee Grounds," by M. Testoni and G. Bimbi, *Chimica e FIndustria* 20, 137, 1938. (Published in Italy.)

CANNING AND PRESERVING

How to Candy High Acid Fruit

BERRIES AND FRUITS with high acid content can be successfully candied if pure sugar (not a syrup) is used in concentrating the juice, and if sodium bicarbonate is correctly used to lower the acidity. The preferred method is to mix the sugar with just enough sodium bicarbonate to give the product less than 1.5 per cent acid, calculated on the dry weight, and pH of approximately 4. This quantity can be ascertained for each case so that the proper mixture of sugar and soda will be employed. Crystallization of the sugar in the final candied fruit is prevented by adjusting the degree of inversion of the sucrose. A suitable proportion of invert sugar and sucrose in the product is from 48 to 59 per cent invert sugar and from 33 to 40 per cent sucrose, calculated on the dry weight.

Digest from "Candying High Acid Fruits and Berries With the Aid of Soda," by A. V. Folts and S. A. Basina, *Konservnaya i Plodovoschchnaya Promyshlennost*, 3, 19, 1938 (Published in U.S.S.R.).

Prevents Brown Discoloration of Cut Plant Tissues

THE COMMON BROWNING of cut surface of peaches, apples, bananas, potatoes, etc., can be prevented by brief immersion of the slices in a solution of 0.1 per cent thiocarbamide followed by draining. No subsequent discoloration takes place.

Digest from "Thiourea Prevents Browning of Plant Tissues and Juices," by F. E. Denny. Contributions from Boyce Thompson Institute for Plant Research, 7, 55, 1935. (Not exactly recent, but worthy nevertheless.—Ed.)

Bacteria in Very Old Cans of Food

THIS IS A CONTINUATION of a series of articles on the examination of some foods that might properly be termed ancient. From roast veal canned in 1824, three different types of living spore-bearing aerobic bacilli were isolated by one institution, but none could be found by another laboratory. The latter was unable to find any bacteria in Libby's Tripe, 1880, nor in "Carrots and Gravy" packed in 1824.

The living bacteria were of three types capable of growing at 55 deg. C., presumably derived from the starch in the "gravy" thickener. The authors believe the spores have remained alive for more than a century.

Digest from "The Examination of Some Tinned Foods of Historic Interest. Part 4." By G. S. Wilson and H. L. Shipp. *Chemistry and Industry*, 57, 834 1938 (Published in England).

DAIRY PRODUCTS

Sweetened Condensed Whey

INSTEAD of returning cheese or casein whey to the farmer for hog feed, it can be used for human food by condensing it with sugar similarly to sweetened condensed milk. The most satisfactory product is obtained by putting the whey through a separator, pasteurizing for 30 minutes at 144 deg. F., adding sugar pound for pound with the whey solids, and condensing in a vacuum pan to 76 per cent total solids. It is then cooled to 95 deg. F., and stirred for three hours to get fine milk sugar crystals, and filled into sealed containers.

Higher pasteurizing temperatures increase the viscosity slightly. It keeps well up to three months at ordinary temperatures, thickening and darkening more at higher storage temperatures. If the whey cream is allowed to remain in, the product has a much heavier body and will not whip. The regular product whips to about 200 per cent over-run in 4 minutes and the whip is stable for 15 hours. Some flavoring should be added to please the taste. Corn sugar or invert sugar can replace up to half the cane sugar but gives a darker colored product.

Digest from "Sweetened Condensed Whey: Its Manufacture and Properties," by G. A. Ramsdell and B. H. Webb, *Journal of Dairy Science*, 21, 305, 1938.

How to Measure Consistency of Butter

EVIDENCE that butter has a "yield value," *i.e.* that permanent deformation can be effected only by pressures exceeding a certain limit, led to a plastometer study with a view to placing firmness ratings on a scientific, quantitative basis. Curves showing the relation of penetration rate to applied pressure, with a stamp of specified diameter under specified conditions, revealed close parallelism between firmness ratings assigned by experienced graders and the yield values indicated by the simple plastometer. A more accurate mechanically operated plastometer has been designed to eliminate the personal factor involved in readings obtained with the manually operated instrument.

Since the plasticity of butter is very sensitive to temperature, and different butters differ in their temperature-plasticity relations, temperature corrections can be applied to plastometer readings only with utmost caution and over only a very narrow range. Two correction charts are given, one for winter and one for summer butters, but the limitations on their use must be remembered. The fact that butter has a yield value is itself in need of explanation. Perhaps it agrees best with the idea that butter retains its original fat globules, partly filled with crystalline fat, while a portion of the fat serves as the continuous phase in which the globules are dispersed.

Digest from "Consistency Studies in Butter," by C. I. Kruisheer and P. C. den Herder, *Chemisch Weekblad* 35, 719, 1938 (Published in Holland).

RAW PRODUCE

Ripening Harvested Fruit

RIPENING of fruit in storage causes changes in respiration and evaporation, but these become less active after the peak of respiratory and vaporization activity is passed. The rise to this peak is accompanied by a corresponding improvement in palatability. But respiration can proceed quite independently of ripening, so that the fruit ages but remains unripe. For this reason the term *ripeness* should connote *palatability* along with other characteristics. There is no general relation connecting the rate of respiration and vaporization with the physical and chemical changes proceeding at the same time in the cellular tissues. There is no evidence that a stage of ripeness can be selected at which the fruit, e.g., apples, will be least susceptible to spoilage. It all depends on the organism responsible for spoilage. For example, no sound basis is known for believing that an apple which has lost the most by evaporation at the time of storage is most susceptible to flecking and decay.

Digest from "Behavior of Fruits in Storage as Related to their Respiratory Processes," by S. A. Trout, *Angewandte Chemie* 51, 599, 1938 (Published in Germany).

SUGAR

Fats from Sugar

THE YEAST known as *Endomyces vernalis* is exceptionally efficient as a converter of sugar to fat. Chemists seeking to explain how this peculiar synthesis is performed in nature's laboratory have long believed that the sugar molecule is broken down into small units (probably acetaldehyde, whose carbon chain is only two atoms long), and that the fat (usually with 16 or 18 atoms in the carbon chain) is built up from these small units.

Recent experiments tend to confirm this idea, but they have also served to show that the yeast cells

(*Turn to page 115*)

Just off the Press

BOOKLETS • LITERATURE • BULLETINS

Food Plant Equipment

AIR-CONDITIONING EQUIPMENT—Air & Refrigeration Corp., 11 W. 42d St., New York, N. Y., has published a catalog describing "Capillary" air conditioning units and their application in industrial air conditioning and air washing.

CANNING EQUIPMENT — Tomato juice extractors and tomato pulpers are the subject of several leaflets issued by F. H. Langsenkamp Co., Indianapolis, Ind.

MATERIALS HANDLING EQUIPMENT—Belt conveyors and bucket elevators, with accessories, are completely described, with specifications, in a loose-leaf illustrated catalog of 124-pages, No. 47 of the Stephens-Adamson Mfg. Co., Aurora, Ill.

MEAT PACKING EQUIPMENT—Reprints from advertisements describing "Boss" cutters, grinders, dehairers, beef hoists, lard rolls, cookers and scalders have been issued by The Cincinnati Butchers' Supply Corp., 2145 Central Parkway, Cincinnati, Ohio.

PROCESSING AND STORAGE TANKS—California Redwood Association, 405 Montgomery St., San Francisco, Calif., has issued Bulletin No. 16-5 describing storage and processing uses of Redwood tanks in the food industries.

ROLLER CONVEYOR—Gravity roller conveyor specifications and installation photographs are included in a loose-leaf catalog of The Lamson Co., Syracuse, N. Y.

STORAGE HANDLING EQUIPMENT—Barrett-Cravens Co., 3255 W. 30th St., Chicago, Ill., has issued Bulletin 406 describing barrel and drum racks for storage and handling purposes.

TIERING TRUCKS—Bulletins describing and illustrating Type F-8 tiering fork trucks and Type E-2 high lift platform trucks have been issued by the Elwell-Parker Electric Co., Cleveland, Ohio.

WATER TREATMENT EQUIPMENT—"Manual of Water Treatment for Bottlers," Bulletin 23-700 and "Hydrodarco Purifiers," Bulletin No. 1700, recent publications of International Filter Co., 59 E. Van Buren St., Chicago, Ill., describe bottling plant equipment for correcting water imperfections and purifiers for removing objectionable tastes and odors from water.

Plant Accessories and Supplies

HEAT TRANSFER EQUIPMENT—More than 20 designs of process heat transfer equipment are listed, described and illustrated in Bulletin 1260 by The Griscom-Russell Co., 285 Madison Ave., New York, N. Y.

LIGHTING FIXTURES—Bulletin No. 1125 of The Pyle-National Co., 1334 N. Kostner Ave., Chicago, Ill., outlines form, style, size and price of lighting fixtures for use under modern industrial conditions.

LUBRICATION EQUIPMENT — The Texas Co., 135 E. 42nd St., New York, N. Y., has published a 42-page illustrated bulletin on specifications, constructional features and application of ball and roller bearing lubrication.

PIPE REPAIR EQUIPMENT—Catalog No. 38A, a 32-page illustrated folder describing repair clamps and saddles for steel and cast-iron pipes, repair equipment for pipe leakage, has been issued by M. B. Skinner Co., South Bend, Ind.

SAFETY SHOES—"Stop Foot Injuries," is the title of a booklet issued by Lehigh Safety Shoe Co., Inc., Allentown, Pa., describing steel toe safety shoes for use in reducing the number of foot injuries in industry.

SPEED CONTROL EQUIPMENT—Variable speed transmissions, Variable Speed Motor pulley and "Motordrive," a unit combining motor and speed reducer, are described in a loose-leaf 124-page illustrated catalog covering variable speed control equipment manufactured by Reeves Pulley Co., Columbus, Ind.

STEAM TURBINES—"Type C" general purpose turbines, capacity range of 5 to 500 hp. at speeds of 1,000 to 5,000 r.p.m., are described in a 12-page illustrated booklet by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

UNIT HEATERS—Fedders Mfg. Co., Inc., Buffalo, N. Y., has issued an illustrated catalog describing Series 4 Unit Heaters for commercial and industrial installations.

VALVES — The Lunkenheimer Co., Cincinnati, Ohio, has recently published a 44-page List Price Schedule R1 covering valves, boiler mountings and lubricating devices.

VALVE CONTROLS—Float valve controls for automatic regulation of refrigerant feed in cooling systems are discussed in Bulletin No. 201-C published by Frick Co., Waynesboro, Pa.

Packaging

PROTECTIVE PACKAGING—A 12-page booklet dealing with case studies in protective food package engineering has been issued by The Menasha Products Co., Menasha, Wis.

STEEL CONTAINERS—Circulars describing dual containers, full flow drums, removable cover pails, 5 gal. I.C.C. drums and steel shipping containers have been published by Wheeling Corrugating Co., Wheeling, W. Va.

PACKAGING EQUIPMENT — "Vapor-Vacuum" caps and sealing machines operating on glass-packed foods at speeds up to 300 per minute, are the subjects of an illustrated folder issued by White Cap Co., 1812 N. Central Ave., Chicago, Ill.

Materials of Construction

HEAT INSULATION—"Research Puts the Diatom to Work," a booklet issued by Johns-Manville, 22 East 40th St., New York, N. Y., describing the history, characteristics and economic significance of the insulating material, diatomaceous earth, is one of the series "Research at Johns-Manville."

FLOOR ARMOR—Heavy duty "Floorsteel" designed for heavy rolling loads is the subject of a 12-page file folder issued by Acme Steel Co., Chicago, Ill.

STEEL—Joseph T. Ryerson & Son, Inc., 203 Westside Ave., Jersey City, N. J., has published its 1939 Stock List, a 248-page indexed catalog listing steel stock available in its warehouses.

Food Equipment News

REVIEW OF FOOD PROCESSING EQUIPMENT, ACCESSORIES, AND SUPPLIES

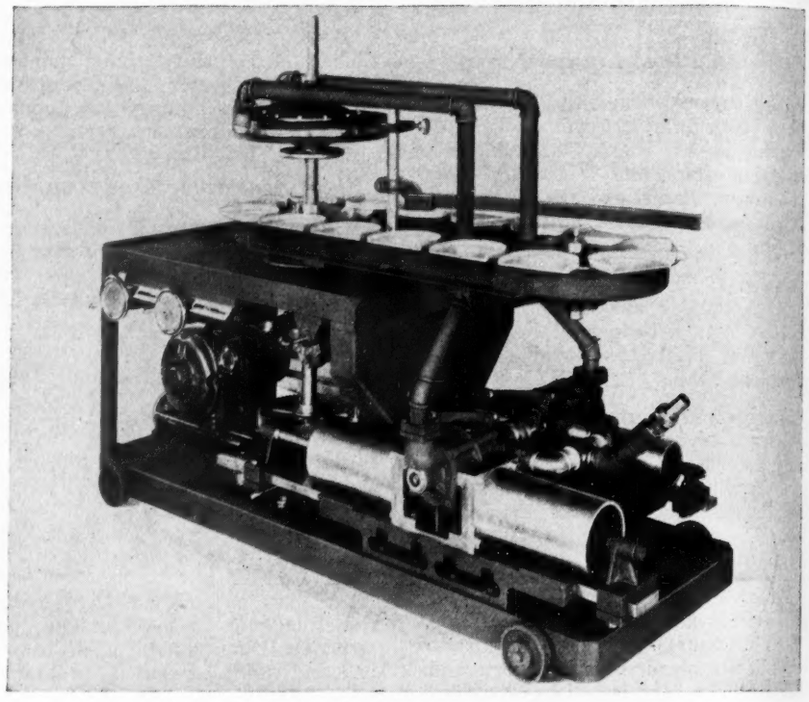
Filling Machine

FOR FILLING MAYONNAISE PRODUCTS, preserves, jams and similar food products, Karl Kiefer Machine Co., Cincinnati, Ohio, has brought out the new, "Two Stream, Piston Type Visco Filling Machine." This machine is shown in the accompanying photo, with body guards removed to give a better view of the operating mechanism.

The filler is of four cylinder, double action type and is said to have a capacity 80 per cent greater than the preceding model. It can be equipped to fill containers up to 2 gal. capacity.

The left hand wheel in the photo adjusts the flow of the near pump, while the right hand wheel adjusts the flow of the far pump. Each pump supplies a separate port in the head. Adjustment of pump flow may be made, for instance, so that the first port fills the container 60 per cent full and the second port fills the remaining 40 per cent, or any other proportions desired may be chosen. Or the pumps may be used independently of each other.

Automatic container lift for filling from the bottom can be supplied if needed.



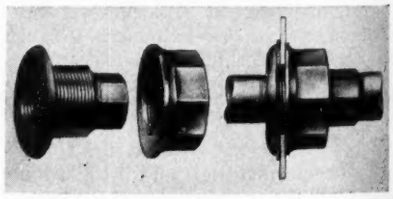
Filling machine for viscous products

Cylindrical Gate Valve

MONAT VALVE & FORGE CO., Bessemer Bldg., Pittsburgh, Pa., has developed a packless, cylindrical gate valve for use with both high and low pressures and temperatures. This valve is called the "Stream Flow," and is said to avoid any cavities while minimizing friction. It is available in sizes from ½ to 8 in., in both standard metals and special alloys. A cap on the bottom of the valve body and the removable bonnet permit cleaning without removing from the line.

Flood Light

BENJAMIN ELECTRIC MFG. CO., Des Plaines, Ill., is making the "Alzo-Lite" floodlight, for illuminating plant yards and other outdoor areas. It is designed for use with 750, 1,000 or 1,500 watt lamps. The light beam cast by this floodlight has a spread of around 65 degrees and is designed to direct accurately the maximum amount of light upon the specific area that is to be illuminated. Construction is weatherproof, the reflecting surface being protected against heat, cold or moisture by the patented Alzak process. It can be cleaned with soap and water. Various styles of mounting are available to suit plant conditions.



Tank flange for pipe connections

Tank Flange

IN THE ILLUSTRATION is shown the "Unitank" flange, made by American Pipe & Steel Corp., Ltd., 720 Date Ave., Alhambra, Calif. This flange is designed to permit the installation of new flanges on steel tanks and vats which are already in position, without the use of any tools except the special cutter supplied by the manufacturer. In this way, pipe connections to tanks can be changed as required by changes in plant operation. The flanges are available in standard metals and special alloys.

Cycle Controller

A SINGLE CAM air-operated cycle controller that provides for control of as many as four separate operations, is being made by The Bristol Co., Waterbury, Conn. The cam is designed to be cut to meet a wide variety of requirements. Additional flexibility is provided through the use of adjustable segments. The instrument has a moisture and dust proof case, enclosed motor and switches.

Packaging Machine

TRIANGLE PACKAGE MACHINERY CO., Chicago, Ill., has developed the Triangle-Rapp "Elec-Tri-Pak" weigher. This is designed to package a wide range of products, filling them into containers by means of electrically operated vibration plates.

The hopper, built into the machine, is waist high for convenience. A continuous belt carries the product from hopper to the vibrator feed plates. These plates rapidly discharge the product until the container is filled close to weight. Then the viration changes so as to dribble in just enough to bring the package to exact weight. The filler is adjustable for a wide range of predetermined weights.

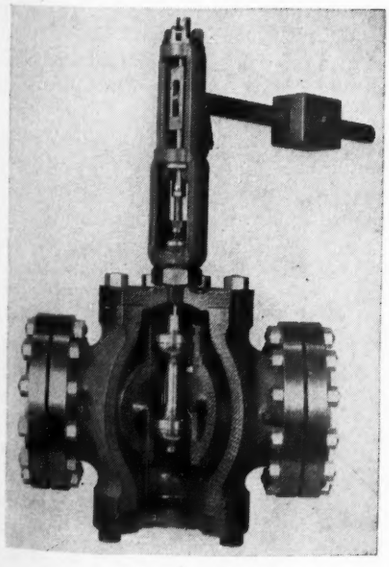
This filler is said to be suitable for such products as potato chips, marshmallows, biscuits, crackers, cookies, candies, noodles, and seeds.

Packaging machine

Balanced Valve

FOR USE WITH STEAM, air, oil, hot or cold water and most gases, A. W. Cash Co., Decatur, Ill., announces the Series 42 balanced lever valves. In Type 42-R, illustrated, the roller guided top works insure free valve movement, valve stem alignment, tight seating, long packing life and minimum friction.

These valves are available with the following types of inner valve: parabolic; flat, with bevel seat; V-port with bevel seat and V-port, non-seating. Sizes available, in any desired valve material, include ½ in. to 3 in., screwed ends, and 1 in. to 12 in. flanged ends.



Balanced valve

Bread Slicer

BAKERY MACHINERY CORP., Milwaukee, Wis., has developed a progressive or staggered cutting bread slicer equipped with a speed control unit to bring about synchronization between the variable speed continuous feed conveyor and the feed discharge conveyor.

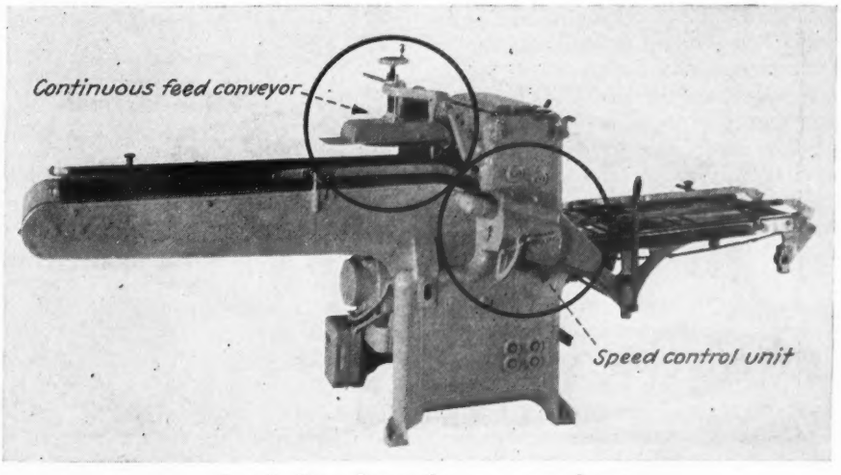
By so regulating the speed of the continuous feed conveyor, "doubling" or piling up of sliced loaves in pockets of the feed discharge conveyor are avoided, as are "misses." Both the discharge conveyor and the continuous feed conveyor are driven from the bread wrapping machine. The speed control unit is driven from the front discharge conveyor through gears. The continuous feed conveyor is also connected with the speed control unit through gears. Eighteen speed changes for the continuous feed conveyor are provided for by the 18 gears in the speed control unit.

When variations in the width of the loaves of bread do not exceed ⅜ in., "misses" or empty pockets in the feed discharge-flight conveyor are rare. When the variations reach the extreme of ⅝ in. one "miss" out of each 135 loaves sliced is average.

In progressive or staggered slicing the knives are set in pairs to enter loaf at each end first and be approximately half way through the loaf when the middle pair of knives make contact with the middle of the loaf. The pattern described on the loaf crust by the knives is a V. Also the feed of the loaves to the knives is such that the knives strike the loaf at a 30 deg. angle to the side of the loaf. This method of slicing is claimed to exert a less crushing force upon the fresh bread than do knives operating so as to enter the loaf all at the same time, even when striking the loaf at a 30 deg. angle to the side of the loaf.

Magnetic Pulley

IMPROVEMENTS in magnetic pulleys for removing tramp iron from foods and other materials have been made by Stearns Magnetic Mfg. Co., Milwaukee, Wis. To allow for greater radiation area, a ribbed construction is now used, including deeper coil pockets which allow for greater magnetic strength. Coil windings have been made more efficient through greater cooling by means of forced air circulation. Redesign has also resulted in a comparatively uniform magnetic field over the entire belt width. Pulleys are now equipped with non-magnetic end rings, which are wear resisting and support the unloaded edges of the belt. Construction has been made weatherproof.



Bread slicer that makes a staggered cut

The Plant Notebook

To Keep Marking Ink Off the Fingers

When lettering the side of a shipping case with marking ink or paint, the material is likely to run down the brush and get on the fingers. This can easily be prevented in the following way: Get a rubber spark plug protecting cap. Slip this over the handle of the brush so that the cup shaped opening is toward the bristle end of the brush. Then any ink that runs back will be caught by the rubber cap.

Photo-Record Camera for Bread and Cake Scoring

American Institute of Baking, Chicago, Ill., has designed a camera to make photographic records of internal characteristics of bread loaves and cake.

By its use, the cell structure, density of crumb near crust, lumpiness, cores, or ridges in the crumb, and other internal crumb details can be recorded and be kept on file along with the surface characteristics heretofore recorded by ordinary photographic means.

The camera, in principle, is like a microscope in construction. The slice of bread or cake is positioned on a ground glass plate like a specimen slide upon a microscope stage with a bright and directed source of light in a confined space below the ground glass plate. The part of the camera structure above the ground glass plate is in truth the photographic part of the unit and similar to the tube of the microscope with a camera lens for the objective and a sheet of sensitized photographic paper for the eyepiece.

The slices of bread or cake are framed in by a light absorbing or repelling border. In this way, photogenic light passing from the light source to the photographic paper has to go through the slice of bread or cake and through the camera lens positioned at a fixed focal length above the slice so as to give an image of the desired size upon the sensitized paper.

As shown in the illustration the unit, built by National Manufacturing Co., Lincoln, Neb., is 4 ft. high, 19 in. wide and 14 in. deep overall constructed of wood and fiber board. It is divided into three integral sections of equal size. Access to the interior of each of the sections is made through pull-down spring hinged doors. The middle section has the ground glass plate or tray which supports the slice of bread or cake to be photographed.

Device used for making photographic records of the internal characteristics of bread and cake

Although this machine was designed and is used largely for photographing slices of bread and cake it is also being used successfully for photographing microorganism colonies on blood-agar bacteriological plates.

Using Overhead Conveyors

Tremendous increase in the distribution and consumption of canned foods has been effected during the past few years by Phillips Packing Co., Cambridge, Md. And to supply this increased market, it has been necessary for the company to work out a plan of speeding up production. This plan involved changes in methods of handling materials through the processing department, and it has resulted in doubling production with the same processing equipment.

The introduction of a more efficient system of handling materials began about six years ago. The first change to be made was the installation of a long cooling tank which was equipped with an overhead chain drive conveyor. This conveyor carried crates of cooked goods from the process room, passing them through the cooling tanks for a distance great enough that the cans were cooled in transit. At the end of the cooling tank the crates were lifted out by an electric hoist and suspended from a monorail system at an angle of about 40 deg. to permit the water to drain off the top of the containers. Subsequently, the cans were conveyed to another section of the plant to be passed through labeling machines and then taken to the packing room. While this arrangement increased production considerably, the company, with its rapidly growing distribution, soon learned that it had its limitations.

About a year later, the necessity arose to increase production at another of the concern's plants. This plant was using a circular arrangement of the retorts, as was the one in which the first changes were made. So in this case, the retorts were moved into parallel lines, with an overhead conveyor above each line. Operating on the conveyor was a motor-driven trolley and hoist which enabled the crates to be taken direct from the retort to the cooling tank. Then, as in the other plant, a cooling tank, with an overhead chain conveyor for moving the crates of canned goods through it, was installed. An electric hoist suspended from a "drain track" for removing the crates from the cooling tank completed the materials handling equipment.

This system worked out so satisfactorily that the company soon changed three or four other plants along the same line, practically doubling the output of each processing room. And with this arrangement the capacity can be still further increased from time to time by minor changes. This was not true when the retorts were arranged in a circle because the number of retorts that could be installed was limited.

Four filling machines were all that could be supplied with the old arrangement in the processing department. But with the new system, eight filling machines are being accommodated, and indications are that one

or two more will be installed before a maximum capacity of the present set-up is reached.

The type of materials handling system and the retort arrangement installed by Phillips lends itself nicely to any plant which has to cope with large production. But in a small cannery, operating on a seasonal basis, there would hardly be need for it, because such a plant would operate from four to six weeks and after that the equipment would stand idle. But where a plant is canning goods the year-round, as is the case with the Phillips company, the arrangement is most satisfactory.

The Cost of Belt Slip

Belt slip is much more important—much costlier—than is generally supposed by most executives. It can, in most cases, be accurately determined by proceeding as follows:

When you want to figure the cost of belt slip you must first determine the percentage of slip, which is a simple matter where conditions in the drive are such that the driven pulley can be operated for a while without load. When no power is transmitted by a belt there is no slip, of course. The driven pulley, then, will rotate as many times per minute as it is possible for it to rotate.

When the belt is transmitting full load, however, there is bound to be a resultant reduction in r.p.m. The driven pulley will not rotate as rapidly as when unloaded, the speed of the driving pulley always being the same. The difference in r.p.m., then, divided by the r.p.m. made unloaded multiplied by 100, gives the percentage of slip.

For example, let us say that a given driven pulley runs 340 r.p.m. in an unloaded state. When the belt carries full load, though, the r.p.m. of the driving pulley being unchanged, the driven pulley makes only 320 r.p.m. What is the percentage of slip?

Applying the above rule we get:

$340 - 320 = 20$

$20 \div 340 = 0.059$

$0.059 \times 100 = 5.9$ per cent slip.

Now, applying these figures to actual conditions, if the drive is a main belt drive it means that you are losing 5.9 per cent of your coal pile or oil bill, or electric power bill, through belt slip alone. Thus if you spend $10,000 per year for fuel or power you are losing?

$\$10{,}000 \times 5.9$ per cent $= \$590.00$ per year due entirely to belt slip of the main drive alone.

This is a considerable sum, but how about the *other* belts? They may be slipping just as much, which could easily mean that your total loss all over the plant due to belt slip is 10 per cent, or ($10,000 × 0.10) $1,000 per year.

To reduce slip to the minimum there are several good methods. A few cents invested in a first class belt treatment, making the belt pliable and increasing its friction coefficient, will often do the trick. Sometimes it is advisable to replace the belt with one that is modern and of high quality. Or, install an up-to-date pivoted base, or a suitable wrapper pulley. Hundreds of dollars per year can usually be saved in this way in nearly any food plant. This applies to all kinds of belts—V-belts as well as flat.—W. F. SCHAPHORST, *Newark, N. J.*

Using Portable Mixers

The question is frequently raised as to whether a portable electric mixer can be safely clamped on a glass-lined tank or stoneware container. One manufacturer gives the following advice:

"The metal clamp should not come in direct contact with the tank. A block of wood or a crutch tip should be used on the clamp screw, while the inside of the tank should be protected by a piece of rubber or leather, cemented to the clamp or folded over the edge of the tank. When used in this way, the tank lining cannot be injured. Metal brackets attachable to one of the tank legs can be bought or made, if this method does not appeal to the user.

"Small crocks of 30 gal. and less capacity should not be expected to carry a mixer. A separate support should be provided and the crocks moved to the mixer. Larger crocks, especially if made of chemical stoneware, will support the mixer without danger, the method of attachment being the same as for glass-lined tanks." —*Information from* MIXING EQUIPMENT CO., *Rochester, N. Y.*

Gas Boiler Speeds Preserve Making

Small automatic gas-fired boilers are a good source of controlled heat in the making of preserves. Preserve mixtures usually contain about 60 per cent fruit, 40 per cent sugar, water and pectin to make the mixture jell. The cooking is done in a copper jacketed kettle and it is said that the faster the cooking the better the flavor. For this reason small batches (50 to 100 lb.) and a seven-minute cooking period are favored. The water and pectin are first put in (3 qt. water for a 100 lb. batch). When mixed thoroughly, the sugar is added and when this is dissolved the fruit is poured in. Mixing must be kept up constantly. Shortly after the mix boils the thermometer in the mix will indicate 222 deg. F., at which time the steam should be immediately turned off and the mix poured out.—*American Gas Association, New York, N. Y.*

Gas-fired boiler installed to supply a line of steam jacketed preserving kettles. Note condensate return system, which saves much heat at the boiler.

Here Are The NEW

FEDERAL FOOD REGULATIONS

Food and Drug Administration Rules, Regulations, Orders

Promulgation of Regulations Under the Federal Food, Drug, and Cosmetics Act and Repeal of Certain Regulations Heretofore Promulgated Thereunder

Under the authority of section 701 (a) of the Federal Food, Drug, and Cosmetic Act (52 Stat. 1040 et seq.; 21 U. S. C. 301 et seq.), the following regulations for the enforcement of the Act are hereby promulgated.

These regulations shall take effect on June 25, 1939; except that, to the extent that they may relate to the enforcement of sections 502 (j), 505, or 601 (a) of the Act, they shall take effect on the date hereof.

The regulations[1] under sections 201 (p), 505, and 702 (b) of the Act, which were promulgated on July 22, 1938, are hereby repealed effective on the date hereof.

December 22, 1938

H. A. WALLACE,
(SEAL) Secretary of Agriculture

[1] 3 F. R. 1846 DI

REGULATIONS FOR THE ENFORCEMENT OF THE FEDERAL FOOD, DRUG, AND COSMETIC ACT

(Items pertaining to foods only)

GENERAL REGULATION

(a) The provisions of regulations promulgated under the Act with respect to the doing of any act shall be applicable also to the causing of such act to be done.

(b) The definitions and interpretations of terms contained in section 201 of the Act shall be applicable also to such terms when used in regulations promulgated under the Act.

(The caption of each of the following regulations designates the section of the Act under which the regulation is issued.)

SECTION 201 (M)
(What is a Label?)

Labeling includes all written, printed, or graphic matter accompanying an article at any time while such article is in interstate commerce or held for sale after shipment or delivery in interstate commerce.

SECTION 201 (N)
(Misleading Labels)

The existence of a difference of opinion, among experts qualified by scientific training and experience, as to the truth of a representation made or suggested in the labeling is a fact (among other facts) the failure to reveal which may render the labeling misleading, if there is a material weight of opinion contrary to such representation.

SECTION 301 (H)
(False Guaranty)

In case of the giving of a guaranty or undertaking referred to in section 303 (c) (2) or (3) of the Act, each person signing such guaranty or undertaking shall be considered to have given it.

SECTION 303 (C)
(Re Penalties Under Guaranties)

(a) A guaranty or undertaking referred to in section 303 (c) (2) of the Act may be—

(1) limited to a specific shipment or other delivery of an article, in which case it may be a part of or attached to the invoice or bill of sale covering such shipment or delivery; or

(2) general and continuing, in which case, in its application to any shipment or other delivery of an article, it shall be considered to have been given at the date such article was shipped or delivered by the person who gives the guaranty or undertaking.

(b) The following are suggested forms of guaranty or undertaking under section 303 (c) (2) of the Act:

(Limited Guaranty)

(1) (Limited Form for use on invoice or bill of sale)

(Name of person giving the guaranty or undertaking) hereby guarantees that no article listed herein is adulterated or misbranded within the meaning of the Federal Food, Drug, and Cosmetic Act, or is an article which may not, under the provisions of section 404 **(Emergency Permit Control)** or 505 **(Regulations making Exemptions)** of the Act, be introduced into interstate commerce.

(Signature and post-office address of person giving the guaranty or undertaking)

(General Guaranty)

(2) (General and Continuing Form)

The article comprising each shipment or other delivery hereafter made by (name of person giving the guaranty or undertaking) to, or on the order of (name and post-office address of person to whom the guaranty or undertaking is given) is hereby guaranteed, as of the date of such shipment or delivery, to be, on such date, not adulterated or misbranded within the meaning of the Federal Food, Drug, and Cosmetic Act, and not an article which may not, under the provisions of section 404 or 505 of the Act, be introduced into interstate commerce.

(Signature and post-office address of person giving the guaranty or undertaking)

(When a Guaranty Becomes Void)

(c) The application of a guaranty or undertaking referred to in section 303 (c) (2) of the Act to any shipment or other delivery of an article shall expire when such article, after shipment or delivery by the person who gave such guaranty or undertaking, becomes adulterated or misbranded within the meaning of the Act, or becomes an article which may not, under the provisions of section 404 or 505 of the Act, be introduced into interstate commerce.

(Re Coal Tar Colors)

(d) A guaranty or undertaking referred to in section 303 (c) (3) of the Act shall state that the shipment or other delivery of coal-tar color covered thereby was manufactured by a signer thereof. It may be a part of or attached to the invoice or bill of sale covering such color. If such shipment or delivery is from a foreign manufacturer, such guaranty or undertaking shall be signed by such manufacturer and by an agent of such manufacturer who resides in the United States.

(e) The following are suggested forms of guaranty or undertaking under section 303 (c) (3) of the Act:

(1) (For domestic manufacturers)

(Name of manufacturer) hereby guarantees that all coal-tar colors listed herein were manufactured by him, and are from batches certified in accordance with the applicable regulations promulgated by the Secretary of Agriculture under the Federal Food, Drug, and Cosmetic Act.

(Signature and post-office address of manufacturer).

(2) (For foreign manufacturers)

(Name of manufacturer and agent) hereby severally guarantee that all coal-tar colors listed herein were manufactured by (name of manufacturer), and are from batches certified in accordance with the applicable regulations promulgated by the Secretary of Agriculture under the Federal Food, Drug, and Cosmetic Act.

(Signature and post-office address of manufacturer)

(Signature and post-office address of agent)

(f) For the purpose of a guaranty or undertaking under section 303 (c) (3) of the Act the manufacturer of a shipment or other delivery of a coal-tar color is the person who packaged such color.

(g) A guaranty or undertaking, if signed by two or more persons, shall

▶Here are the first of the new regulations that affect food manufacturers. Note that these are regulations—not the law itself. Better read that too. The regulations explain the law. If you have been holding up label orders in order to find out what is needed, you have the official information here.

Omitted are those regulations that pertain to drugs, cosmetics and devices.

These food regulations become effective on June 25, 1939. Very important for

All Food Manufacturers

state that such persons severally guarantee the article to which it applies.

(h) No representation or suggestion that an article is guaranteed under the Act shall be made in labeling.

SECTION 305
(Re Hearing Before Report of Criminal Violation)

(*a*) Presentation of views under section 305 of the Act shall be private and informal. The views presented shall be confined to matters relevant to the contemplated proceeding. Such views may be presented by letter or in person by the person to whom the notice was given, or by his representative. In case such person holds a guaranty or undertaking referred to in section 303 (c) (2) or (3) of the Act applicable to the article on which such notice was based, such guaranty or undertaking, or a verified copy thereof, shall be made a part of such presentation of views.

(*b*) Upon request, seasonably made, by the person to whom a notice appointing a time and place for the presentation of views under section 305 of the Act has been given, or by his representative, such time or place, or both such time and place, may be changed if the request states reasonable grounds therefor. Such request shall be addressed to the office of the Food and Drug Administration which issued the notice.

SECTION 403 (A)
(Re Misbranding Food)

(*a*) Among representations in the labeling of a food which render such food misbranded is a false or misleading representation with respect to an other food or a drug, device, or cosmetic.

(*b*) The labeling of a food which contains two or more ingredients may be misleading by reason (among other reasons) of the designation of such food in such labeling by a name which includes or suggests the name of one or more but not all such ingredients, even though the names of all such ingredients are stated elsewhere in the labeling.

SECTION 403 (E)
(Re Statements Required on Labels)

(*a*) If a food is not manufactured by the person whose name appears on the label, the name shall be qualified by a phrase which reveals the connection such person has with such food, such as "Manufactured for and Packed by ——", "Distributed by ————", or other similar phrase which expresses the facts.

(Re Street Address)

(*b*) The statement of the place of business shall include the street address, if any, of such place, unless such street address is shown in a current city directory or telephone directory.

(Re Main Office)

(*c*) If a person manufactures, packs, or distributes a food at a place other than his principal place of business, the label may state the principal place of business in lieu of the actual place where each package of such food was manufactured or packed or is to be distributed, if such statement is not misleading in any particular.

(*d*) The requirement that the label shall contain the name and place of business of the manufacturer, packer or distributor shall not be considered to relieve any food from the requirement that its label shall not be misleading in any particular.

(Re What Is Net Contents)

(*e*) (1) The statement of the quantity of the contents shall reveal the quantity of food in the package, exclusive of wrappers and other material packed with such food.

(2) The statement shall be expressed in the terms of weight, measure, numerical count, or a combination of numerical count and weight or measure, which are generally used by consumers to express quantity of such food and which give accurate information as to the quantity thereof. But if no general consumer usage in expressing accurate information as to the quantity of such food exists, the statement shall be in terms of liquid measure if the food is liquid, or in terms of weight if the food is solid, semisolid, viscous, or a mixture of solid and liquid except that such statement may be in terms of dry measure if the food is a fresh fruit, fresh vegetable, or other dry commodity.

(*f*) (1) A statement of weight shall be in terms of the avoirdupois pound and ounce. A statement of liquid measure shall be in terms of the United States gallon of 231 cubic inches and quart, pint, and fluid ounce subdivisions thereof, and, except in case of frozen food which is so consumed, shall express the volume at 68° Fahrenheit (20° Centigrade). A statement of dry measure shall be in terms of the United States bushel of 2150.42 cubic inches and peck, dry quart, and dry pint subdivisions thereof; or in terms of the United States standard barrel and its subdivisions of third, half, and three-quarters barrel. However, in the case of an export shipment, the statement may be in terms of a system of weight or measure in common use in the country to which such shipment is exported.

(2) A statement of weight or measure in the terms specified in subdivision (1) of this paragraph may be supplemented by a statement in terms of the metric system of weight or measure.

(3) Unless an unqualified statement of numerical count gives accurate information as to the quantity of food in the package, it shall be supplemented by such statement of weight, measure, or size of the individual units of the food as will give such information.

(*g*) Statements shall contain only such fractions as are generally used in expressing the quantity of the food. A common fraction shall be reduced to its lowest terms; a decimal fraction shall not be carried out to more than two places.

(How to Record Net Contents)

(*h*) (1) If the quantity of food in the package equals or exceeds the smallest unit of weight or measure which is specified in paragraph (*f*) of this regulation, and which is applicable to such food under the provisions of paragraph (*e*) (2) of this regulation, the statement shall express the number of the largest of such units contained in the package (for example, the statement on the label of a package which contains one quart of food shall be "1 quart", and not "2 pints" or "32 fluid ounces"), unless the statement is made in accordance with the provisions of subdivision (2) of this paragraph. Where such number is a whole number and a fraction, there may be substituted for the fraction its equivalent in small units, if any smaller is specified in such paragraph (*f*) (for examples, 1¾ quarts may be expressed as "1 quart 1½ pints" or "1 quart 1 pint 8 fluid ounces"; 1¼ pounds may be expressed as "1 pound 4 ounces"). The stated number of any unit which is smaller than the largest unit (specified in such paragraph (*f*) contained in the package shall not equal or exceed the number of such smaller units in the next larger unit so specified (for examples, instead of "1 quart 16 fluid ounces" the statement shall be "1¼ quarts" or "1 quart 1 pint"; instead of "24 ounces" the statement shall be "1½ pounds" or "1 pound 8 ounces").

(2) In the case of a food with respect to which there exists an established custom of stating the quality of the contents as a fraction of a unit, which unit is larger than the quantity contained in the package, or as units smaller than the largest unit contained therein, the statement may be made in accordance with such custom if it is informative to consumers.

(*i*) The statement shall express the minimum quantity, or the average quantity, of the contents of the packages. If the statement is not so qualified as to show definitely that the quantity expressed is the minimum quantity, the statement shall be considered to express the average quantity.

(Re Variations in Net Contents)

(*j*) Where the statement expressed the minimum quantity, no variation below the stated minimum shall be permitted except variations below the stated weight or measure caused by ordinary and customary exposure, after the food is introduced into interstate commerce, to conditions which normally occur in good distribution practice and which unavoidably result in decreased weight or measure. Variations above the stated minimum shall not be unreasonably large.

(*k*) Where the statement does not express the minimum quantity—

(1) variations from the stated weight or measure shall be permitted when caused by ordinary and customary exposure, after the food is introduced into interstate commerce, to conditions which normally occur in good distribution practice and which unavoidably result in change of weight or measure;

(2) variations from the stated weight, measure, or numerical count shall be permitted when caused by unavoidable deviations in weighing, measuring, or counting individual packages which occur in good packing practice. But under subdivision (2) of this paragraph variations shall not be permitted to such extent that the

average of the quantities in the packages comprising a shipment or other delivery of the food is below the quantity stated, and no unreasonable shortage in any package shall be permitted, even though overages in other packages in the same shipment or delivery compensate for such shortage.

(*l*) The extent of variations from the stated quantity of the contents permissible under paragraphs (*j*) and (*k*) of this regulation in the case of each shipment or other delivery shall be determined by the facts in such case.

(*m*) A food shall be exempt from compliance with the requirements of clause (2) of section 403 (e) of the Act if—

(1) the quantity of the contents, as expressed in terms applicable to such food under the provisions of paragraph (*e*) (2) of this regulation, is less than one-half ounce avoirdupois, or less than one-half fluid ounce, or (in case the units of the food can be easily counted without opening the package) less than six units; or

(2) the statement of the quantity of the contents of the package, together with all other words, statements, and information required by or under authority of the Act to appear on the label, cannot, because of insufficient label space, be so placed on the label as to comply with the requirements of section 403 (*f*) of the Act and regulations promulgated thereunder.

SECTION 403 (F)
(Re Food Label Design)

(*a*) A word, statement, or other information required by or under authority of the Act to appear on the label may lack that prominence and conspicuousness required by section 403 (f) of the Act by reason (among other reasons) of—

(1) the failure of such word, statement or information to appear on the part or panel of the label which is presented or displayed under customary conditions of purchase;

(2) the failure of such word, statement, or information to appear on two or more parts or panels of the label, each of which has sufficient space therefor, and each of which is so designed as to render it likely to be, under customary conditions of purchase, the part or panel displayed;

(3) the failure of the label to extend over the area of the container or package available for such extension, so as to provide sufficient label space for the prominent placing of such word, statement, or information;

(4) insufficiency of label space (for the prominent placing of such word, statement, or information) resulting from the use of label space for any word, statement, design, or device which is not required by or under authority of the Act to appear on the label;

(5) insufficiency of label space (for the prominent placing of such word, statement, or information) resulting from the use of label space to give materially greater conspicuousness to any other word, statement, or information, or to any design or device;

(6) smallness or style of type in which such word, statement, or information appears, insufficient background contrast, obscuring designs or vignettes, or crowding with other written, printed, or graphic matter.

(b) No exemption depending on insufficiency of label space, as prescribed in regulations promulgated under section 403 (e) or (i) of the Act, shall apply if such insufficiency is caused by—

(1) the use of label space for any word, statement, design, or device, which is not required by or under authority of the Act to appear on the label;

(2) the use of label space to give greater conspicuousness to any word, statement, or other information than is required by section 403 (f) of the Act; or

(3) the use of label space for any representation in a foreign language.

(*c*) (1) All words, statements and other information required by or under the authority of the Act to appear on the label or labeling shall appear thereon in the English language.

(2) If the label contains any representation in a foreign language, all words, statements, and other information required by or under authority of the Act to appear on the label shall appear thereon in the foreign language.

(3) If the labeling contains any representation in a foreign language, all words, statements, and other information required by or under authority of the Act to appear on the label or labeling shall appear on the labeling in the foreign language.

SECTION 403 (I)
(Re Listing Ingredients in Foods for Which There Is No Standard)

(*a*) The name of an ingredient (except a spice, flavoring, or coloring which is an ingredient of a food other than one sold as a spice, flavoring, or coloring), required by section 403 (i) (2) of the Act to be borne on the label of a food, shall be a specific name and not a collective name. But if an ingredient (which itself contains two or more ingredients) conforms to a definition and standard of identity prescribed by regulations under section 401 of the Act, such ingredient may be designated on the label of such food by the name specified in the definition and standard, supplemented, in case such regulations require the naming of optional ingredients present in such ingredient, by a statement showing the optional ingredients which are present in such ingredient.

(*b*) No ingredient shall be designated on the label as a spice, flavoring, or coloring unless it is a spice, flavoring, or coloring, as the case may be, within the meaning of such term as commonly understood by consumers. The term "coloring" shall not include any bleaching substance.

(*c*) An ingredient which is both a spice and a coloring, or both a flavoring and a coloring, shall be designated as spice and coloring, or flavoring and coloring, as the case may be, unless such ingredient is designated by its specific name.

(*d*) A label may be misleading by reason (among other reasons) of—

(1) the order in which the names of ingredients appear thereon, or the relative prominence otherwise given such names; or

(2) its failure to reveal the proportion of, or other fact with respect to, an ingredient, when such proportion or other fact is material in the light of the representation that such ingredient was used in fabricating the food.

(*e*) (1) A food shall be exempt from the requirements of clause (2) of section 403 (i) of the Act if all words, statements, and other information required by or under authority of the Act to appear on the label of such food, cannot, because of insufficient label space, be so placed on the label as to comply with the requirements of section 403 (f) of the Act and regulations promulgated thereunder. But such exemption shall be on the condition that, if the omission from the label of the statement of the quantity of the contents affords sufficient space to state legibly thereon all the information required by such clause (2), such statement of the quantity of the contents shall be omitted as authorized by regulation (*m*) (2) under section 403 (e) of the Act, and the information required by such clause (2) shall be so stated as prominently as practicable even though the statement is not of such conspicuousness as to render it likely to be read by the ordinary individual under customary conditions of purchase.

(2) In the case of an assortment of different items of food, when variations in the items which make up different packages packed from such assortment normally occur in good packing practice, and when such variations result in variations in the ingredients in different packages, such food shall be exempt from compliance with the requirements of clause (2) of section 403 (i) of the Act with respect to any ingredients which is not common to all packages. But such exemption shall be on the condition that the label shall bear, in conjunction with the names of such ingredients as are common to all packages, a statement in terms which are as informative as practicable and which are not misleading, indicating that other ingredients may be present.

SECTION 403 (K)
(Re Artificial Flavors, Colors and Preservatives)

(*a*) (1) The term "artificial flavoring" means a flavoring containing any sapid or aromatic constituent, which constituent was manufactured by a process of synthesis or other similar artifice.

(2) The term "artificial coloring" means a coloring containing any dye or pigment, which dye or pigment was manufactured by a process of synthesis or other similar artifice, or a coloring which was manufactured by extracting a natural dye or natural pigment from a plant or other material in which such dye or pigment was naturally produced.

(3) The term "chemical preservative" means any chemical which, when added to food, tends to prevent or retard deterioration thereof; but does not include common salt, sugars, vinegars, spices or oils extracted from spices, or substances added to food by direct exposure thereof to wood smoke.

(*b*) A food which is subject to the requirements of section 403 (k) of the Act shall bear labeling, even though such food is not in package form.

(*c*) A statement of artificial flavoring, artificial coloring, or chemical preservative shall be placed on the food, or on its container or wrapper, or on any two or all of these, as may be necessary to render such statement likely to be read by the ordinary individual under customary conditions of purchase and use of such food.

(*d*) A food shall be exempt from compliance with the requirements of section 403 (k) of the Act if it is not in package form and the units thereof are so small that a statement of artificial flavoring, artificial coloring, or chemical preservative, as the case may be, cannot be placed on such units with such conspicuousness as to render it likely to be read by the ordinary individual under customary conditions of purchase and use.

SECTION 405
(Re Open Containers, and Repacking)

(*a*) (1) An open container is a container of rigid or semi-rigid construction, which is not closed by lid, wrapper, or otherwise.

(2) An open container of a fresh fruit or fresh vegetable, the quantity of contents of which is not more than one dry quart, shall be exempt from the labeling requirements of paragraphs (*e*), (*g*) (2) (with respect to the name of the food specified in the definition and standard), and (*i*) (1) of section 403 of the Act; but such exemption shall be on the condition that if two or more such containers are enclosed in a crate or other shipping package, such crate or package shall bear labeling showing the number of such containers enclosed therein and the quantity of the contents of each.

(*b*) Except as provided by paragraphs (*c*) and (*d*) of this regulation, a shipment or other delivery of a food which is, in accordance with the practice of the trade, to be processed, labeled, or repacked in substantial quantity at an establishment other than that where originally processed or packed, shall be exempt, during the time of introduction into and movement in interstate commerce and the time of holding in such establishment, from compliance with the labeling requirements of section 403 (c), (e), (g), (h), (i), (j) and (k) of the Act if—

(1) the person who introduced such shipment or delivery into interstate commerce is the operator of the establishment where such food is to be processed, labeled, or repacked; or

(2) in case such person is not such operator, such shipment or delivery is made to such establishment under a written agreement, signed by and containing the post-office addresses of such person and such operator, and containing such specifications for the processing, labeling, or repacking, as the case may be, of such food in such establishment as will insure, if such specifications are followed, that such food will not be adulterated or misbranded within the meaning of the Act upon completion of such processing, labeling, or repacking. Such person and such operator, shall each keep a copy of such agreement until all of such shipment or delivery has been removed from such establishment, and shall make such copies available for inspection at any reasonable hour to any officer or employee of the Department who requests them.

(*c*) An exemption of a shipment or other delivery of a food under clause (1) of paragraph (*b*) of this regulation shall, at the beginning of the act of removing such shipment or delivery, or any part thereof, from such establishment, become void ab initio if the food comprising such shipment, delivery, or part is adulterated or misbranded within the meaning of the Act when so removed.

(*d*) An exemption of a shipment or other delivery of food under clause (2) of paragraph (*d*) of this regulation shall become void ab initio with respect to the person who introduced such shipment or delivery into interstate commerce upon refusal by such person to make available for inspection a copy of the agreement, as required by such clause.

(*e*) An exemption of a shipment or other delivery of a food under clause (2) of paragraph (*b*) of this regulation shall expire—

(1) at the beginning of the act of removing such shipment or delivery, or any part thereof, from such establishment if the food comprising such shipment, delivery, or part is adulterated or misbranded within the meaning of the Act when so removed; or

(2) upon refusal by the operator of the establishment where such food is to be processed, labeled, or repacked, to make available for inspection a copy of the agreement, as required by such clause.

SECTION 702 (B)
(Re Taking Samples)

(*a*) (1) When any officer or employee of the Department collects a sample of a food, drug, or cosmetic for analysis under the Act, the sample shall be designated as an official sample if records or other evidence is obtained by him or any other officer or employee of the Department indicating that the shipment or other lot of the article from which such sample was collected was introduced or delivered for introduction into interstate commerce, or was in or was received in interstate commerce, or was manufactured within a Territory. Only samples so designated by an officer or employee of the Department shall be considered to be official samples.

(2) For the purpose of determining whether or not a sample is collected for analysis the term "analysis" includes examinations and tests.

(3 The owner of a food, drug, or cosmetic of which an official sample is collected is the person who owns the shipment or other lot of the article from which the sample is collected.

(*b*) When an officer or employee of the Department collects an official sample of a food, drug, or cosmetic for analysis under the Act, he shall collect at least twice the quantity estimated by him to be sufficient for analysis, unless—

(1) the amount of the article available and reasonable accessible for sampling is less than twice the quantity so estimated;

(2) the cost of twice the quantity so estimated exceeds $10;

(3) the article is perishable;

(4) the sample is collected from a shipment or other lot which is being imported or offered for import into the United States;

(5) the sample is collected from a person named on the label of the article, or his agent, and such person is also the owner of the article;

(6) the sample is collected from the owner of the article, or his agent, and such article bears no label or, if it bears a label, no person is named thereon; or

(7) the analysis consists principally of rapid analytical procedures, organoleptic examination, or other field inspection examinations or tests, made at the place where the sample is collected or in a mobile or temporary laboratory.

In addition to the quantity of sample prescribed above the officer or employee shall, if practicable, collect as part of the sample such further amount of the article as he estimates to be sufficient for use as exhibits in the trial of any case that may arise under the Act based on the sample.

(*c*) After the Food and Drug Administration has completed such analysis of an official sample of a food, drug, or cosmetic as it determines, in the course of analysis and interpretation of analytical results, to be adequate to establish the respects, if any, in which the article is adulterated or misbranded within the meaning of the Act, or otherwise subject to the prohibitions of the Act, and has reserved an amount of the article it estimates to be adequate for use as exhibits in the trial of any case that may arise under the Act based on the sample, a part of the sample, if any remains available, shall be provided for analysis, upon written request, by any person named on the label of the article, or the owner thereof, or the attorney or agent of such person or owner, except when—

(1) after collection, the sample or remaining part thereof has become decomposed or otherwise unfit for analysis, or

(2) the request is not made within a reasonable time before the trial of any case under the Act, based on the sample, to which such person or owner is a party.

The person, owner, attorney, or agent who requests the part of sample shall specify the amount desired and make advance payment of the cost thereof. A request from an owner shall be accompanied by a showing of ownership, and a request from an attorney or agent by a showing of authority from such person or owner to receive the part of sample. When two or more requests for parts of the same sample are received the requests shall be complied with in the order in which they were received so long as any part of the sample remains available therefor.

(*d*) When an official sample of a food, drug, or cosmetic is the basis of a notice given under section 305 of the Act, or of a case under the Act, and the person to whom the notice was given, or any person who is a party to the case, has no right under paragraph (*c*) of this regulation to a part of the sample, such person or his attorney or agent may obtain a part of the sample upon request accompanied by a written waiver of right under such paragraph (*c*) from each person named on the label of the article and owner thereof, who has not exercised his right under such paragraph (*c*). The operation of this paragraph shall be subject to the exceptions, terms, and conditions prescribed in paragraph (*c*) of this regulation.

(*e*) The Food and Drug Administration is authorized to destroy—

(1) any official sample when it determines that no analysis of such sample will be made;

(2) any official sample or part thereof when it determines that no notice under section 305 of the Act. and no case under the Act, is or will be based on such sample;

(3) any official sample or part thereof when the sample was the basis of a notice under section 305 of the Act, and when, after opportunity for presentation of views following such notice, it determines that no other such notice, and no case under the Act, is or will be based on such sample;

(4) any official sample or part thereof when the sample was the basis of a case under the Act which has gone to final judgment, and when it determines that no other such case is or will be based on such sample;

(5) any official sample or part thereof if the article is perishable;

(6) any official sample or part thereof when, after collection, such sample or part has become decomposed or otherwise unfit for analysis;

(7) that part of any official sample which is in excess of three times the quantity it estimates to be sufficient for analysis.

(F.R. Doc. 38-3897; Filed, December 23, 1938; 12:39 p.m.) (From Federal Register, December 28, 1938.)

The Food Industry News

Hormel To Give Workers Cut of Annual Profits

More pioneering in the field of industrial relations is being undertaken by Geo. A. Hormel & Co., Austin, Minn. For some years this meat packing house has been guaranteeing employees an annual wage. Now an experiment is to be conducted with a plan for giving employees a cut of the yearly profits. The new arrangement, which does not replace the straight-time pay plan, is being tried out only at the company's headquarters in Austin.

Under this joint earnings plan, all wages and salaries paid to employees plus all the profits from the operation of the Austin plant will be thrown together into one fund. Then this will be divided between employees and stockholders in the ratio of 80 per cent to eligible employees and 20 per cent to stockholders. In event the 80 per cent is more than enough to cover the pay checks, which the workers already will have received, the joint earnings account will be divided 80–20 as long as the money holds out or until the employees have received four weeks' additional pay. After employees have this additional pay, the balance will be split 50–50 between stockholders and employees.

The amount going to employees will be divided on the basis of the regular weekly rate of pay held by each employee at the close of the year.

AGMA Starts Program Of Public Relations

A program of public relations on a scale never attempted by any other industry was launched last month by Associated Grocery Manufacturers of America. This program is expected to make the public realize and appreciate how much its standards of living have been bettered by the progress made by the grocery products industry. The opening barrage of the program took the form of announcement through national advertising of the "Parade of Progress" to be held from April 6 to May 6 and featuring nationally advertised products. The program being conducted by the industry will involve billions of impressions upon the minds of consumers, these being made through newspapers, magazines, the radio, point of sale promotion and other media.

The 250 members of AGMA participating in the campaign have a combined annual sales of more than four billion dollars and they employ more than a million people. Cooperating with them in putting their message over to the public are some 120,000 grocery stores, together with retail and wholesale food associations.

Wallace Seeks to Reduce Food Distributing Costs

Marked reductions in the costs of distribution are objectives of the "cracker barrel" food plan advocated by Secretary Wallace as a means of moving a larger volume of foods into general consumption. The reductions in cost contemplated would involve curtailment of such costs as those of packaging, handling and transportation, as well as reductions in charges and margins. The plan is confined to foods for which there is a wide and flexible demand, such as milk, cheese, fruits, vegetables and meats. It does not pertain to such commodities as wheat and other staple crops.

The Secretary expects to move a greater volume by marketing ungraded fruits and vegetables in bulk and in cheaper containers, as well as cheaply packed canned and dried foods and ground meats in plain wrappers. Efforts will also be made to obtain reduction in freight rates and handling costs. If these can be gained, the reductions would contribute to a lower selling price. And it is the hope that the price may be lowered until low-income families can afford the products in large—or at least sufficient—quantities.

What has the food industry to gain from such a plan? The Secretary has an answer. He argues that there will be increased profit from the larger volume and that the increased variety of foods bought will establish better food habits and put the food industry on a broader and firmer basis during future years.

Where reduction in costs can not be made sufficient to move large quantities, or where the cuts would deprive the producer of adequate return, subsidies may be employed.

This cracker-barrel food policy follows abandonment of the two-price plan, an earlier attempt to move surplus farm commodities into production. No effort will be made to link the plan with the AAA marketing agreement organization, though that may be used where it already is in operation.

President Wants More Money For Enforcement

Increased appropriations for three government activities affecting the food industries were asked by the President in his budget message to Congress last month. For enforcement of the food, drug and cosmetic law, the President wants $2,500,000 for the coming year as compared with $1,748,380 for the current fiscal year. Most of this fund would be used to employ additional chemists and other technologists, as well as a number of attorneys.

Extension of the activities of the Federal Trade Commission is forecast in the request for an increase of $130,000 in the appropriation. And significant of more inquiry into the affairs of industry is the request by the President that the appropriation for carrying on the anti-trust campaign be practically doubled.

Vitamin from Viscera Is New Fish Byproduct

Heretofore considered waste, the viscera of fish used in making fish liver oil has been found rich in vitamin A. This is according to a report before the Fisheries Research Board of Canada by Dr. N. M. Carter of the Dominion Fisheries Experimental Station at Prince Rupert, B. C. British Columbia fishermen, who have been receiving supplementary revenue from the sale of halibut and cod livers, have further increased their income with fish viscera. All halibut and black cod viscera was saved during the past year and sold at 10 cents a pound, and some ling cod viscera was also sold. The viscera is purchased by fishing companies, packed in cans, frozen and sent to extraction companies in the East or treated in the plant at Prince Rupert.

Best Packages for 1938 To Be Selected Feb. 16

America's best packages for 1938 will be selected on Feb. 16 in the Eighth Annual Competition for the Irwin D. Wolf Awards. Sponsored by American Management Association, the competition is for the grand prize, the Irwin D. Wolf Trophy, and for awards in 21 separate package classifications.

Presentation of the awards will be made at the Ninth Packaging Exposition, to be held in New York, March 7–10.

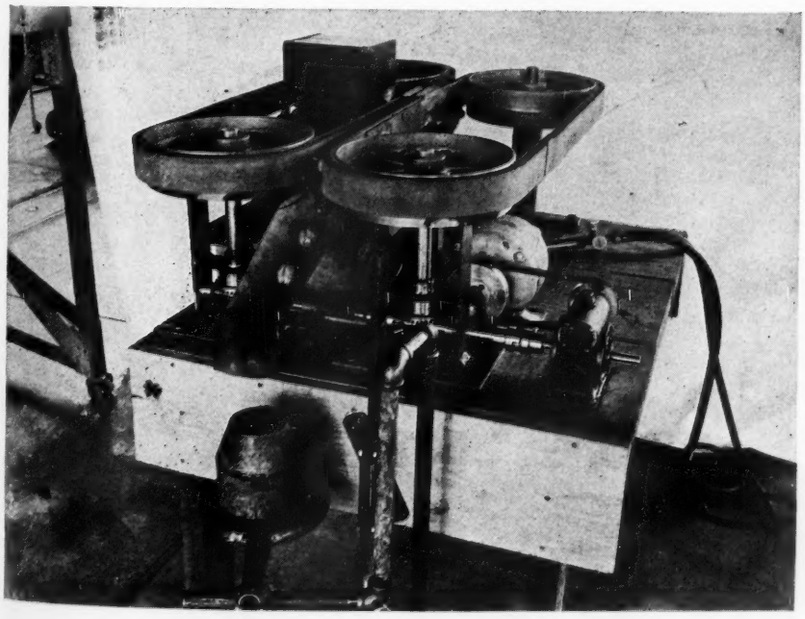
Eligible for participation in the competition is any package placed on the market in 1938. Packages entered in the competition must be received by Irwin D. Wolf Awards, Room 300, Empire State Building, New York, by Feb. 8. Entry forms, accompanied by a check for the entry fees, should be sent to Irwin D. Wolf Awards Administration, 232 Madison Ave., New York, N. Y. The entry fee is $5 for single packages, 50 cents per entry for additional classifications and 50 cents for each additional package in a family of packages.

The awards will be based upon the factors which contribute to merchandising effectiveness, economy, efficiency and good design. In addition to the Irwin D. Wolf Trophy, awards will be made in each of the following classifications:

The most effective package (1) employing a single color, (2) more than one color; (3) most effective use of typography and/or lettering, (4) of elements of design to create shelf visibility; (5) most effective redesigned package; (6) most effective use of merchandising ingenuity; (7) most effective package designed to add to consumer convenience; (8) most effective packaging of a combination sales unit; (9) most effective package employing a secondary use; (10) most effective use of layout and/or decorative design; (11) most effective package insert; (12) most effective use of inventive genius in package construction; (13) most effective use of two or more packaging materials in one package; (14) most effective family of packages; (15) most effective package designed to promote the package as a gift; (16) most effective package for a product not previously packaged; (17) package most effectively displaying specific buying information; (18) most effective shipping container from the standpoint of printing and color, (19) from the standpoint of merchandising and construction ingenuity; (20) counter display pieces that most effectively contribute to the selling of a unit package; (21) floor display pieces that most effectively sell the unit package.

Resin Protects Hams

Protection of hams in storage and transit by the use of a synthetic resin covering is reported by the Foodstuffs Division, Bureau of Foreign and Domestic Commerce, as having been developed in England, according to official reports from London. The covering is claimed to afford protection against mildew, absorption of foreign odors, contamination and general deterioration due to rough handling. The development has been carried on by the Gelaprint Company, Ltd., which has named the product the B. G. Synthetic Protecto Packing.



CRACKS NUTS FROM INSIDE

The shells are literally blown from walnuts by this machine, developed by the University of California. The nuts pass over a circular saw which cuts a slot in the shell, and a mixture of gas is shot into the nut. Then the nut drops through a round gas burner, the flame of which ignites the explosixe mixture inside the shell. Broken particles of shells are separated from the nutmeat mechanically. This cracker has a capacity of 900 lb. of walnuts an hour and will cost less than $200. It is expected to replace the hand-cracking operation, a process that damages wholly or partly about 80 per cent of production.

M.I.T. To Hold Food Technology Conference

Another food technology conference, which may eclipse in importance the highly successful one in 1937, is to be held at Massachusetts Institute of Technology, Cambridge, Mass., from June 28 to July 1. The conference will be sponsored by the Division of Food Technology of the Department of Biology and Public Health. The principal themes of the conference will be quality control and food engineering as they apply to the various branches of the food industry. The final program has not been announced, but outstanding men of the food industry will be speakers. At the first food technology conference held at M.I.T., in September, 1937, more than 500 persons from 23 states and 7 countries attended, and many important technical papers were presented.

Vitamin A Potency of Cheese Measured

I. L. Hathaway and H. P. Davis of the dairy department of the University of Nebraska recently completed a study of the vitamin A content of 22 kinds of cheese. Twelve experiments were made, in which approximately 1,100 rats were used, and while there was considerable variation in the vitamin A content of some kinds of cheese, the samples of cottage, limburger and Neufchatel generally had the lowest potency and Roquefort was high.

From data obtained in the study it was estimated that the different cheeses contain the following number of units of vitamin A per pound:

Cheddar (N. Y. type)	9,897
Roquefort	18,216
Camembert	16,400
Liederkranz	15,606
Cheddar (canned)	7,037
Danish brick	10,896
Edam (made at the college)	5,024
Edam (purchased)	11,213
Danish blue	15,900
Chantelle	8,671
Limburger	5,811
Kraft pimento	10,714
American	9,806
brick	6,386
creamed Old English	13,937
Swiss	8,943
limburger	6,628
Cheddar (Wis. type)	9,556
Cream	10,044
Olive nut	10,023
Relish cream	14,467
Cottage	1,801
Neufchatel	5,266
Pimento cream	14,615

From chemical analysis of the samples, the experimenters found that the vitamin A potency does not strictly parallel the fat content.

Texas to Have Food Conference in April

Developments in preserving foods will be discussed at a conference on food preservation which will be held at the University of Texas, Austin, April 13-14. To be held under the joint

auspices of American Society of Refrigerating Engineers and the engineering department of the University of Texas, the conference will comprise four technical sessions and two evening meetings. The first session will be devoted to food technology in general, the second to locker storage plants, the third to quick freezing and the fourth to transportation. The first evening meeting will be devoted to demonstrations of equipment, and on the second night a banquet will be held.

Canners Establish Fund For Economic Research

Decision to do something about the economic problems which trouble the industry was the climax of the 32d annual convention of National Canners Association, held in Chicago, Jan. 22-27. The canners appropriated $25,000 to conduct economic research into proper financing, competition, distribution, consumption and government relations. An outside agency will be selected to study the financing needs of the industry, while the statistical division of the Association will study market practices, adjustment of production to demand, climatological factors affecting yields and geographical distribution of shipments.

The aim of this research is not to develop a formula for success nor merchandising schemes, but to obtain basic information insuring intelligent production and merchandising plans and sounder relations with related industries, bankers and government. Many of the canners believe that overproduction has been abetted by unwise financial aid from the government and from bankers.

Every effort on the part of the grocery industry to reduce costs of distributing foods to low-income groups was urged by Jesse W. Tapp, president of Federal Surplus Commodities Corp., in an address before the National-American Wholesale Grocers Association, which also convened in Chicago. Mr. Tapp made no mention of the two-price plan.

To serve as president for the coming year, the canners elected Walter L. Graefe, Pomona Products Corp., Griffin, Ga. H. F. Krimendahl, Crampton Canneries, Inc., Celina, Ohio, was named first vice-president; Leonard E. Wood, California Packing Corp., second vice-president.

CONVENTIONS

FEBRUARY

6–18—Eighteenth Annual Canners' and Fieldmens' School, Oregon State College, Corvallis, Ore.

20–22—Associated Retail Bakers of America, Carter Hotel, Cleveland.

MARCH

3– 5—Canners' League of California, Del Monte Hotel, Del Monte, Calif.

7–10—Ninth Packing Exposition and Conference, sponsored by American Management Association, Hotel Astor, New York.

13–16—American Society of Bakery Engineers, Edgewater Beach Hotel, Chicago.

CAPITAL VIEWS

LABEL EXEMPTIONS NEEDED—After June, foods must be elaborately labeled to show practically all ingredients "unless. . . ." This "unless" is the important thing right now because the Department of Agriculture invites industries to request the exemption of many foods "having common or usual names" from this requirement. Manufacturers who do not arrange to secure such exemption will have to observe Sec. 401 of the new law, which is very explicit. Delays may be dangerous.

NEW ALCOHOL STANDARDS — Food manufacturers using various completely or specially denatured alcohols will need to get the new specifications published by the Bureau of Internal Revenue, January 4. Various new formulas and new denaturants are prescribed, some of which combinations may be valuable for food processing.

RETAILERS MORE EFFECTIVE—The organized retailers of the country are now recognized in Washington as one of the most effective new pressure groups affecting legislation. It is expected that their influence will be very strongly felt in support of chain-store restrictions during the present Congress. But the alliance of chain distributors and agricultural folks who have come to like chains may be an adequate offset for over-drastic legislation.

STREAM POLLUTION—The new session of Congress will fight over again the battle between complete federal regulation of stream pollution and the cooperation between state and federal authorities. The outcome, to be expected in the late spring at the earliest, is likely to be a law very much like the one which the President vetoed last summer. This will give the food industries plenty to think about, but assures a reasonable period for development of pollution-prevention methods where required.

PROCESSING TAXES—For further agricultural legislation there is a bitter battle brewing between those who want to finance farm relief by processing taxes and those who are seeking to have outright price-fixing undertaken by the Federal Government. It looks as though food manufacturers using these raw materials would be "stuck" in either event. They surely will be unless some third scheme, persuasive on Congress, is developed soon.

CONTAINER BATTLE—Washington notes with much interest, and even some amusement, the way in which the battle of glass vs. paper vs. tin is developing for food products. Soon after the evils of glass-container patent practice were paraded at the Capitol, milk in paper containers was announced for residents of the Capital.

Congressmen Introduce Number of Food Bills

As soon as the Congressmen got squared away for their new session, legislation affecting the food industries began to come before the House and Senate.

Repeal of the Miller-Tydings Act is aimed at in the bill (S. 204) introduced by Senator King (Utah). This measure would amend the first section of the Sherman Antitrust Act to make it read as it did prior to enactment of the Miller-Tydings Law.

In answer to Secretary Wallace's challenge to his opponents to write a better farm law, senator Frazier (North Dakota) introduced a "cost-of-production" bill. This provides that the Secretary determine the cost of production of agricultural products which enter interstate or foreign commerce and have a value of more than $10,000,000. All dealers in interstate or foreign commerce would be licensed and would have to pay the cost of production as the minimum for products. Surpluses would be disposed of in world markets at world prices.

Hearings Are Prolonged

Indications are that the task of considering and recording evidence from which food standards are to be promulgated is to be a long drawn out affair. This conclusion is reached from the length of the first public hearings which were held in Washington during the past month in connection with the Federal Food, Drug and Cosmetic Act. Any interested party is given full opportunity to present evidence.

Sugar Situation Remains In International Snarl

Appeal to the President himself to straighten out the sugar snarl is declared by representatives of the domestic sugar interests in Washington to be the only way out of their predicament. The sugar men confess themselves bitterly disappointed over the results of their opposition to the proposed slash in sugar duties and insist they are hopelessly confused by the situation in the Capitol.

Domestic sugar interests look with lifted eyebrows at the various compromise proposals which have been advanced in different quarters. One of these proposals is that Cuba greatly increase her purchases of American rice to make up for the slash in the duty. Another plan would give the Cubans a greatly reduced sugar quota.

Tests Demonstrate Value Of Vitamin A to Vision

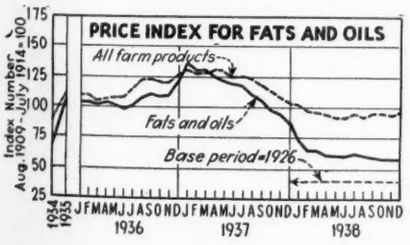
Practical tests by the Bureau of Home Economics of the Department of Agriculture have demonstrated a definite relation between vitamin A in the diet and vision in dim light. And the results suggest that persons who habitually live on a low vitamin A diet may be the cause of automobile accidents at twilight or after dark when drivers stare into the bright lights of approaching cars and do not regain normal vision. Furthermore, low vitamin A diets narrow the field of vision, so that even in daylight persons on such diets would not have the proper side vision to enable them to see traffic approaching at intersections.

At the end of 36 days without vitamin A, one of the persons participating in the Bureau's tests required ten times as much light as normal to see in dim light. After 43 days, 10,000 times as much light was required.

From the tests, it was evident that a moderately active person weighing 132 lb. should have at least 3,600 international units of vitamin A daily, or about 0.002 grams.

Hearing on Colors Feb. 6

On February 6 there will be held in Washington a public hearing on proposed regulations for the certification of coal tar colors under the Federal Food, Drug and Cosmetic Act. When this new law goes into effect on June 25, manufacturers may use only coal tar colors which have been certified by the Department of Agriculture as harmless and suitable for use. In the proposed regulations which are to be considered in the hearing, 132 colors are listed, including the 15 colors certified under the Food and Drugs Act of 1906.



Construction News

	Pending (thousands)	Awarded Jan. (thousands)	Total Awarded 1938 (thousands)
Bakery	$70	$.....	$738
Beverages	160	398	4,337
Canning and Preserving	40	80	240
Confectionery	.....	.....	62
Grain Mill Products	110	40	810
Ice Manufactured	.....	.....	400
Meats and Meat Products	200	40	2,058
Milk Products	.....	40	925
Miscellaneous	805	74	5,279
	$1,385	$672	$14,849**

** Complete 1938 awards

Upholds Filled-Milk Law

Constitutionality of the "filled milk" law of Missouri has been upheld by the Supreme Court. This law forbids the mixing of any foreign fat or oil in milk. Similar laws have been held unconstitutional in Illinois, Nebraska and Michigan. In effect fifteen years, enforcement of the law had been stopped during the past three years by an injunction obtained in the Circuit Court by a grocery concern.

Salad Dressing at Peak

Production of mayonnaise, salad dressings and related products in 1937 was at a peak, according to figures recently released by the United States Department of Commerce. Output in that year stood at 38,150,000 gal., valued at approximately $50,000,000.

When these totals are broken down, it is seen that salad dressings, accounting for 21,790,000 gal., compared to 10,990,000 gal. for mayonnaise, retain the 2 to 1 ratio established several years ago. Sandwich spreads, at 3,780,000 gal. continue to show an increase. Output of French dressing was 1,180,000 gal., while miscellaneous products accounted for the remaining 420,000 gal.

It is interesting to note that about 40 per cent of all the containers used for various salad dressing products in 1937 were of the half pint size.

Meat Consumption Up

According to a review of 1938 operations in the meat packing industry, made by W. W. Woods, Institute of American Meat Packers, consumption of meat in 1938 totaled about sixteen and a half billion pounds. This would indicate a per capita meat consumption of 128 lb. in 1938, compared to 124.4 lb. in 1937.

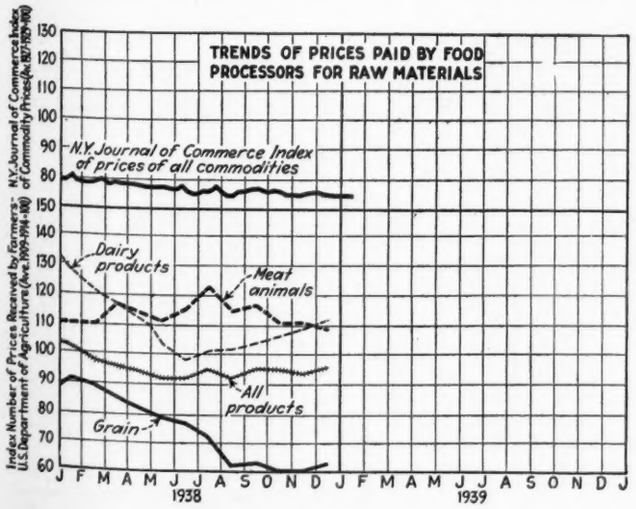
Hog Slaughter to Rise

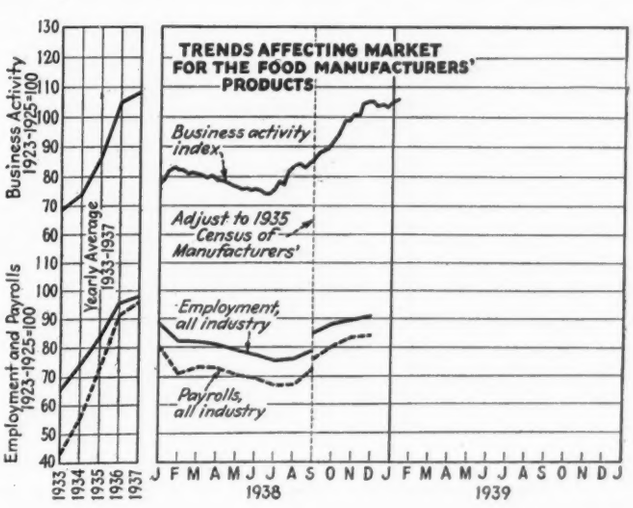
Spring and fall pig crops in 1938 are reported by the Bureau of Agricultural Economics to have reached a total of 71,088,000, up 15 per cent over the 1937 crop. In consequence, the supply of hogs for slaughter will be greater in 1939 than for some years past.

Commodity Prices Fail To Show Marked Trend

No change in the general level of commodity prices marked the passage into a new year. Indexes of wholesale commodity prices, in the month from mid-December to mid-January were, in general, steady. The wholesale price index of the United States Department of Labor stood at 77.1 on Dec. 10, 1938, and at 77.0 on Jan. 7, 1939. For food prices alone, however, the index number of the Department of Labor showed some loss, from 73.7 on Dec. 10 to 72.6 on Jan. 7.

Individual food commodity prices showed only minor changes in recent weeks. Wheat, No. 2, hard winter, Kansas City, increased from 64¾ cents to 67½ cents in the month ending Jan.


TRENDS OF PRICES PAID BY FOOD PROCESSORS FOR RAW MATERIALS
N.Y. Journal of Commerce Index of prices of all commodities
Dairy products
Meat animals
All products
Grain
Index Number of Prices Received by Farmers U.S. Department of Agriculture (Aug. 1909-July 1914=100)
N.Y. Journal of Commerce Index of Commodity Prices (Aug. 1907-July 1914=100)
J F M A M J J A S O N D J F M A M J J A S O N D J
1938
1939


Business Activity 1923-1925=100
Yearly Average 1933-1937
Employment and Payrolls 1923-1925=100
1933
1934
1935
1936
1937
TRENDS AFFECTING MARKET FOR THE FOOD MANUFACTURERS' PRODUCTS
Business activity index
Adjust to 1935 Census of Manufacturers'
Employment, all industry
Payrolls, all industry
J F M A M J J A S O N D J F M A M J J A S O N D J
1938
1939

14. Corn increased from 51¼ cents to 51½ cents in the same period. Beef and lamb showed slight increases, while pork was unchanged. Eggs fell from 30 cents to 22 cents, the hens being misled by mild weather and producing at spring levels. Butter was off 2 cents per lb. to 26¼ in the four weeks, and cheese recorded a ½ cent drop to 13½ cents for the period. Sugar and coffee recorded small declines, while cocoa increased slightly in price.

However, a slight trend toward higher prices became evident in commodity markets around mid-January and an outlook for somewhat better prices until spring continued to be the guess of many of the market-wise.

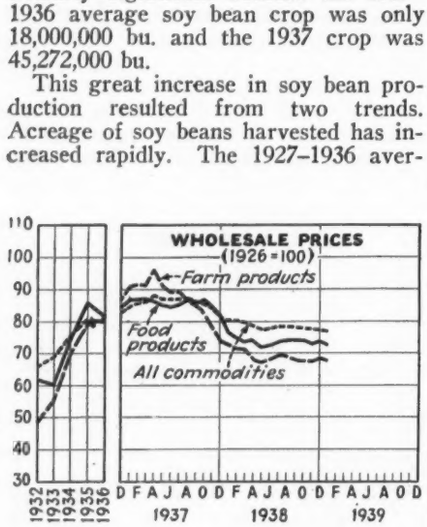
Less Beer Produced

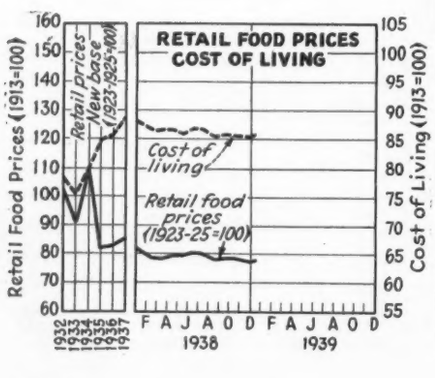
For the fiscal year 1938 (July 1, 1937 to June 30, 1938) production of fermented malt liquors (beer and ale) decreased in the United States, according to the Bureau of Internal Revenue. The figure reported for the fiscal year 1938 was 56,340,163 bbl., compared to 58,748,087 bbl. for the preceding year, a decline of 4 per cent.

Soy Beans Make Record

In 1938, soy bean production reached a total of 57,665,000 bu., the largest crop of this product ever harvested in the United States. This yield is particularly significant because the 1927–1936 average soy bean crop was only 18,000,000 bu. and the 1937 crop was 45,272,000 bu.

This great increase in soy bean production resulted from two trends. Acreage of soy beans harvested has increased rapidly. The 1927–1936 average acreage was but 1,231,000 acres. This increased to 2,549,000 acres in 1937 and in 1938 was at a high of 2,898,000 acres. In addition, yield per acre has increased, the 1927–1936 average being 14.2 bu., the 1937 yield, 17.8 bu., and the 1938 yield, 19.9 bu.





Cocoa Consumption Down

Apparent deliveries of cocoa for domestic consumption in the United States in 1938 totaled 3,262,662 bags, according to the annual survey of Scarburgh Co. This shows a slight drop from the 3,477,062 bags recorded in 1937 and compares to a record of 4,573,095 bags in 1936. These estimates are based on recorded deliveries and are not an index of the amount of cocoa actually used during the year by the industry, as no figures are available concerning unprocessed stocks in manufacturers' hands.

Olive Oil Output Registers Record Low

Drought in the Mediterranean basin, civil war in Spain, and the fatigue of the trees after the large 1937 crop, all combined to bring in low yield of olive oil in 1938. In contrast to a 1929–1935 average production of 941,000 short tons, a 1936 yield of 783,000 short tons, and a 1937 output of 1,290,700 short tons, the 1938 crop is now estimated at 692,300 short tons.

INDICATORS

FLOUR PRODUCTION in the United States in 1938 was the largest in several years, according to *The Northwestern Miller*, which reported a total of 66,259,793 bbl. milled during the year by mills reporting weekly to that publication.

CANNED PEA STOCKS, unsold, on Jan. 1, 1939, were 12,820,557 cases, compared to 6,246,202 cases a year before, according to the National Canners Association.

FRUIT, canned in California in 1938, totaled 13,875,496 cases, compared to 21,517,634 cases in 1937, according to Canners League of California.

OLEOMARGARINE SALES, as indicated by sales of revenue stamps, totaled 351,291,089 lb. for the first eleven months of 1938, compared to 358,266,596 lb. for the like period of 1937.

BUTTER PRODUCTION, according to the Bureau of Agricultural Economics, totaled 1,666,478,000 lb. for the first eleven months of 1938, compared to 1,512,423,000 lb. for the corresponding months of 1937.

COFFEE CONSUMPTION reached a new high in 1938, when 1,900,000,000 lb. was imported into the U. S., about 150,000,000 lb. above 1935, the previous high year. Per capita consumption for 1938 was estimated at 14.38 lb., compared to 13.36 lb. in 1936, the next highest year.

FRUITS, frozen, in storage on Jan. 1, 1939, totaled 124,703,000 lb., compared to 124,666,000 lb. a year previous, and a 1933–37 average for the date of 69,811,000 lb.

VEGETABLES, frozen, in storage on Jan. 1, 1939, totaled 64,671,000 lb., compared to 29,351,000 lb. on Jan. 1, 1938.

BUTTER, creamery, in storage on Jan. 1 this year was 127,805,000 lb., compared to 42,953,000 lb. a year before, and a 1933–37 average for the date of 56,364,000 lb.

CHEESE, all kinds, in storage on the first of this year totaled 119,690,000 lb. This compares to 103,935,000 lb. on Jan. 1, 1938, and a 1933–1937 average for Jan. 1 of 94,571,000 lb.

EGGS, case equivalent, in storage on Jan. 1 this year were 2,092,000 cases, compared to 3,951,000 cases a year previous and a Jan. 1 average for 1933–37 of 2,363,000 lb.

POULTRY, frozen, in storage, Jan. 1, 1939, was 139,188,000 lb., compared to 123,500,000 lb. on Jan. 1, 1938, and a 1933–37 average for Jan. 1 of 132,485,000 lb.

MEAT, all kinds, in cure and storage on Jan. 1, 1939, was 560,064,000 lb. The total a year before was 529,655,000 lb., while the Jan. 1 average, 1933–37, was 766,029,000 lb.

LARD in storage on the first of this year totaled 107,109,000 lb., compared to 53,693,000 lb. on Jan. 1, 1938, and a 1933–37 average for Jan. 1 of 98,046,000 lb.

WEEKLY FOOD INDEX of Dun & Bradstreet, Inc., stood at $2.31 on Jan. 10, 1939, a new low for the last four years and comparing to $2.53 a year previous.

Data for the Curves

In preparing the curves shown on this and the preceding two pages of FOOD INDUSTRIES, data were obtained from the following sources: Prices received by farmers, U. S. Department of Agriculture; employment, payrolls, wholesale and retail prices, U. S. Department of Labor; cost of living, National Industrial Conference Board; commodity price index, *N. Y. Journal of Commerce;* business activity index, *Business Week;* fats and oils, Bureau of Raw Material for American Vegetable Oils and Fats Industries.

Men, Jobs & Companies

INDUSTRY

American Brewing Co., New Orleans, has leased the Wagner Brewery in Granite City, Ill., for ten years and has put its Regal beer on the St. Louis market. This move is in line with the company's expansion into the Middlewest and Atlantic seaboard markets.

Boedeker Ice Cream Co., Dallas, Tex., will distribute frosted fruits, vegetables and poultry for the Booth Corp. Other distributors for Booth include Central Dairy Products Co., Oklahoma City, and Banner Ice Cream Co., Abilene, Tex.

Booth Corp. has been formed as a subsidiary of Booth Fisheries Corp., Chicago, to handle the company's frozen fruit, vegetable and poultry business. The company will eventually supply the national market. The products to be frozen include strawberries, blackberries, red sour cherries, peaches, loganberries, youngberries, green beans, broccoli, cauliflower, peas, peas and carrots, cut corn, corn on the cob, spinach, asparagus and lima beans.

Canada Dry Bottling Co., Charlotte, N. C., is spending $50,000 to remodel a plant which it will put in operation this month. The company was formed with capital of $150,000.

Coca-Cola Bottling Co. is carrying out a $100,000 expansion and remodeling program at Montgomery, Ala.

Dairymen's Milk Co. is constructing a two-story addition to its plant at Cleveland.

Consolidated Biscuit Co. has completed a new plant at West Roxbury, Mass., construction of which was made necessary by increasing business in the New England territory.

Fletcher Coffee & Spice Co., Little Rock, Ark., has installed equipment for the manufacture of peanut butter. Salad dressing was recently added to the company's line of products.

George A. Hormel & Co., Austin, Minn., has established an eastern division with headquarters in New York. A. A. Dacey, a director of the company and manager of the beef division, heads up the new unit. James L. Olson becomes acting manager of the beef division.

JASON F. WHITNEY

He has purchased Blue Moon Cheese Products, Inc., Minneapolis, and is assuming complete control. He retired in 1932 as president and general manager of Kraft-Phenix Cheese Corp. Prior to that he had been head of Phenix Cheese Co.

DR. GEORGE F. STEWART

Formerly in charge of research with Omaha Cold Storage Co., he has been appointed Associate Professor by Iowa State College, Ames. He is to head up the newly created department of poultry products research.

Hygrade Food Products Corp., New York, has purchased the $12,000,000 Buffalo plant of Jacob Dold Packing Co., one of the oldest meat concerns in the United States. The Dold company was established in 1841 and it had grown until its gross business totaled $52,000,000 in 1929.

Kraft-Phenix Cheese Corp. has purchased Sanchez Cheese Corp., one of the largest distributors of Kraft products in the Chicago territory. Kraft is installing a fleet of modern refrigerated trucks for servicing retail establishments.

Macke Packing Co., Delphos, Ohio, recently was taken over by St. Mary's Packing Co., St. Mary's, Ohio.

Milwaukee Coca-Cola Bottling Co. will spend approximately $300,000 on a new plant, garage, new bottling machinery and motor vehicles. The new plant is expected to be completed by Oct. 30. The company will also double the production capacity at its plant in Green Bay, Wis.

Nehi Bottling Co. has purchased a site for a new plant at Charlotte, N. C., and will erect a $35,000 structure with $50,000 in equipment.

Procter & Gamble Co. will build a $1,000,000 plant in Quincy, Mass., for the manufacture of cooking fats and soap.

Quality Macaroni Co. has leased a five-story plant in St. Paul.

Senn Products Corp., Brooklyn, N. Y., has purchased the chocolate milk business of National Dairy Products Co. and its subsidiary, R. G. Miller & Sons, Hartford, Conn. The Senn company now has distribution from Maine to Washington, D.C.

Swift & Co.'s peanut-shelling plant and storage warehouse near Albany, Ga., were destroyed by fire recently. Damage was estimated at between $85,000 and $95,000. Swift recently opened a modern oleomargarine plant at Atlanta. The plant has a capacity of 3,600 lb. an hour.

Wigwam Bakeries, Inc., Casper, Wyo., has purchased four bakeries from Dutch Maid Bakeries, Inc., Cheyenne.

PERSONNEL

Robert H. Black has been appointed to direct the grain standards and testing research activities of the Bureau of Agricultural Economics. He has been in charge of the bureau's district office of Federal grain supervision at Minneapolis.

Fred Borres, president of Ballard & Ballard Co., Louisville, has been nominated for a second term as president of Millers' National Federation.

J. K. Burkholder, Sanitary Cream Co., Decatur, Ill., is the new president of Illinois Milk Dealers Association.

Richard Dietz, formerly with Hathaway Bakeries, Cambridge, Mass., is now production superintendent of Paramount Baking Corp., Roxbury, Mass.

Bert Dolan has been appointed general manager for Club House Beverage Co., a new concern at Springfield, Mass.

Walter H. Enz has become director of personnel for Libby, McNeill & Libby in their operations in the Hawaiian Islands.

J. K. Farley, Jr., formerly president of Farley Confections, Inc., Chicago, with his son, Preston, has recently organized Farley Manufacturing Co., Chicago. The company will specialize in the manufacture of confection jellies, pan specialties and lozenges.

L. H. Fratzke, International Milling Co., has been elected chairman of the Niagara Frontier Section of American Association of Cereal Chemists.

Clarence C. Gates, manager of the Brooklyn Maxwell House plant of General Foods Corp., has been given general supervision of the Sanka Coffee plant in Brooklyn. This move is in preparation for combining both production operations at the company's new processing factory in Hoboken early this year.

E. H. Goldsmith has become vice-president of the Omaha plant of Omar Baking Co. He formerly was its sales manager. Mary M. Brooke, chief chemist, has resigned.

Alvin Griesedieck, St. Louis brewer, now heads up Brewing Industry, Inc.

Elmer J. Grimmett has been placed in charge of engineering by General Foods Corp., New York.

C. F. Johnson has been elected president of Northwest Salmon Canners Association. He is with International Packing Co., Seattle.

Dr. Stroud Jordan has taken a position with Franklin Sugar Refining Co., Philadelphia, in charge of the manufacturers' service division of the general sales department. For several years, Dr. Jordan served as consultant to National Confectioners' Association and in the past was chief chemist for Henry Heide, Inc., and managing director of Applied Sugar Laboratories, New York. The position which he is now leaving is that of chief of the Bureau of Standardization, Department of Purchase of the City of New York.

P. B. Kimball has been appointed chief engineer of Rumford (R.I.) Chemical Works, succeeding J. W. Tingley.

COLONEL JACOB RUPPERT

He died Jan. 13 at the age of 71. He was president of Ruppert Brewing Co., New York, owner of the world champion New York Yankees and holder of New York real estate valued at $30,000,000. Colonel Ruppert had been head of his brewing business for 42 years, his father who operated the business before him having retired in 1896. Colonel Ruppert was an outstanding figure in the brewing industry. He was one of the founders and first chairman of the United Brewers Industrial Foundation, and he served as president of the United States Brewers Association for several years.

Albert E. Marshall has been elected president of Rumford (R.I.) Chemical Works. He succeeds William L. Sweet, who has become chairman of the board. Mr. Marshall served the company in 1927 as consulting engineer, two years ago became a director, and last year a member of the executive committee.

Lee M. Marshall has become advertising manager of Continental Baking Co., New York.

R. D. McKee, for five years assistant manager of the Los Angeles plant of Wilson & Co., has been made manager of the plant, succeeding the late A. E. Peterson.

H. Leslie Poppe has been named general manager of Perfection Biscuit Co., Fort Wayne, Ind.

DEATHS

George R. Anthony, 71, vice-president of Anthony Milk Co., Nashville, Tenn., Jan. 11. He had been in the dairy business 25 years.

Roy N. Bishop, 60, president of Sperry Flour Co. from 1924 to 1929, at San Francisco, Dec. 20.

Gilman M. Dame, 72, president of Northport (Mich.) Canning Co., Jan. 2.

Fred W. Gunther, 84, founder of F. W. Gunther Co. and a pioneer in the Wisconsin canning industry, recently, at Racine, Wis.

Ernest H. Hubbell, 74, one of the founders of Isaly Dairy Co., Youngstown, Ohio, and for many years manager of Eidelweiss Brewing Co., Dec. 21.

David D. Long, 82, founder of the Oswego (N.Y.) Candy Works, Inc., Jan. 15.

Amandus W. Smith, Jr., 41, general manager and secretary of H. & S. Baking Co., Sandusky, Ohio, Dec. 23.

Seymour S. Summerfield, 55, president of Summerfield Dairy, Inc., Little Rock, Ark., Dec. 15.

Walter J. Vreeland, 57, secretary of National Sugar Refining Co. of New Jersey, Jan. 16, in Brooklyn, N. Y.

A. J. Walter, 81, vice-president and a director of National Candy Co., St. Louis, Dec. 27.

William Whitfield Woods, 48, for ten years president of Institute of American Meat Packers, January 20, at Chicago. Mr. Woods, who died in his office of heart attack, had been with the Institute since 1918, when he became its director of public relations.

John G. Zeller, 90, founder and former president of National Biscuit Co., New York, Jan. 1. Mr. Zeller's first acquaintance with the baking industry began in Richmond, Ind., 75 years ago.

ASSOCIATED INDUSTRIES

Allis-Chalmers Manufacturing Co., Milwaukee, has established a new branch office at Newark, N. J. C. A. Pihl has been appointed manager of the branch.

Celluloid Corp., New York, has created a new division in its sales department to be known as the molding powder division. William T. Cruse is director of sales.

General Electric Co., Schenectady, N. Y., has appointed R. M. Alvord, J. E. N. Hume and A. S. Moody, commercial vice-presidents.

Monsanto Chemical Co., Springfield, Mass., has appointed C. F. Reeves manager of the New York sales branch of the plastics division.

Steam Jacketed Kettles

(*Continued from page 67*)

pressure line with consequent disastrous results.

I would strongly advise all kettle users to give this situation serious thought, as it may save them considerable trouble in the end. When purchasing new kettles, it has, in many instances, been the practice to duplicate kettles in service. Many of these might not be condemned under a new law, but they might be restricted to lower pressures, which would so retard operations as to make the purchase of new kettles a necessity.

State inspection and official stamping of kettles will probably meet with opposition on the part of some manufacturers and users, on account of increased cost, but, in the long run, it will be to the advantage of both. Manufacturers will be able to establish standards and know that, when stamped, kettles will be acceptable in any state, and users will be able to transfer kettles from one plant to another, regardless of state lines, without difficulty or argument with local authorities. Insurance will be easier to obtain, as a stamped kettle will be evidence acceptable to all companies, and, more important, the danger to operators will be eliminated, as well as the worries of the owner.

With the ever-increasing use of steam jacketed kettles in food and chemical plants, the kettle manufacturers are taking a more prominent place in the processing field than ever before, and should welcome a standardization movement that will be uniform in all states. It will probably be some time before this develops, but it will be wisdom on the part of both manufacturers and users to anticipate this movement as far as possible.

I have conversed with the chief boiler inspectors of several states on this subject, and find there is a real need for unfired pressure vessel inspection in the smaller sizes, which are not now covered. There are innumerable vessels that have been in service for years, on which no manufacturer's data is available. These, unless tested periodically, become a menace, and it is none too early for manufacturers and users to lead the way toward safer installations.

It is not necessary to wait for laws to be passed to force safety upon us. While there are no official specifications, it is safe to work with the insurance companies, as what they are prepared to underwrite will have the necessary factors of safety, and, in all probability, will meet any regulations that may be enacted.

Frozen Bread

(*Continued from page 69*)

have tried a few practical experiments that bread will keep indefinitely as long as it is frozen. But research at the Institute[4], indicates that this is not at all the case. And the eating test at the annual meeting of American Bakers Association, previously mentioned, adds proof. Yet freezing seems to be a most promising method of eliminating "stales."

Our studies indicate that there is a certain definite limit as to the length of time bread can be kept fresh while frozen. This time limit depends on the temperature. Freezing has proven a practical method of preservation and retention of good eating qualities in other foods and may, in the future, prove equally practical for bakery products.

It was the widespread interest in the freezing of foods and the desire to

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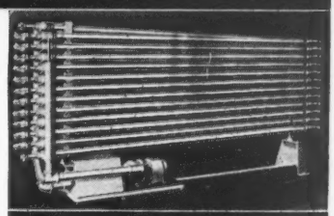
SANITARY EQUIPMENT FOR PROCESSING FRUIT AND VEGETABLE JUICES

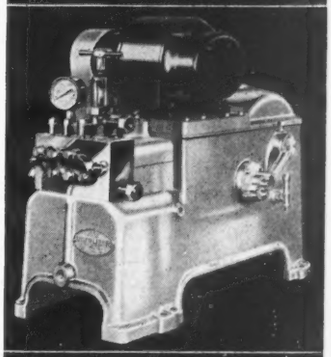
FLASH PASTEURIZER

The Cherry-Burrell Internal Tube Stainless Steel Fineline Heater, illustrated at the right, makes an ideal flash type of pasteurizer for the processing of fruit and vegetable juices, as the product is completely enclosed during pasteurization. Accurate controls maintain correct temperatures. Available in capacities from 4,000 to 14,000 pounds per hour.



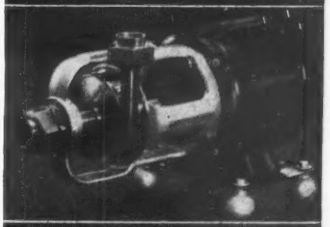
THE SANITARY VISCOLIZER

The Viscolizer is designed to be used for the *sanitary* and intimate mixing or homogenizing of solids in liquids by mechanical dispersion to prevent separation — mixtures of solids and oils (vegetable, mineral and animal). Widely used in processing tomato juice and vegetable juices for infant feeding. Capacities range from 75 gallons to 1,000 gallons per hour.



ALL STAINLESS STEEL FLEXFLO SANITARY CENTRIFUGAL PUMP

Only stainless steel comes in contact with the product. The head or casing, the shaft and the impeller can be taken completely apart for cleaning. Direct motor drive (splash-proof); no outboard bearings — no base plates. Available in capacities from 2,000 pounds to 100,000 pounds per hour.



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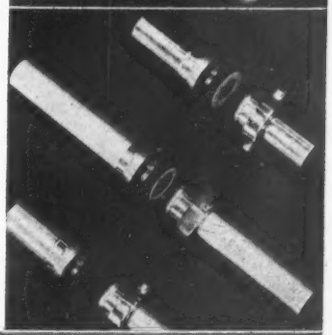
And Stainless White Metal Demountable Sanitary Fittings. Cherry-Burrell sanitary piping and fittings are available in sizes ranging from 1" to 3" in diameter. There is a Cherry-Burrell fitting to meet every need — all designed to comply with the most rigid sanitary regulations.



Send for illustrated bulletins describing any or all of these Cherry-Burrell specialties, stating what product is to be processed and handled.

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get to the bottom of conflicting reports on frozen bakery products that led American Institute of Baking to study bread freezing. The study was an attempt to determine and correlate facts and to project experimental freezing beyond that previously carried out on bread in the United States. It was also hoped that the study might extend the theory of bread staling, throw light on the subject of bread flavor and offer a comparison of physiochemical tests with consumer preferences. The economic objective sought in the preservation of bread by freezing was the reduction or possible elimination of losses resulting from staling.

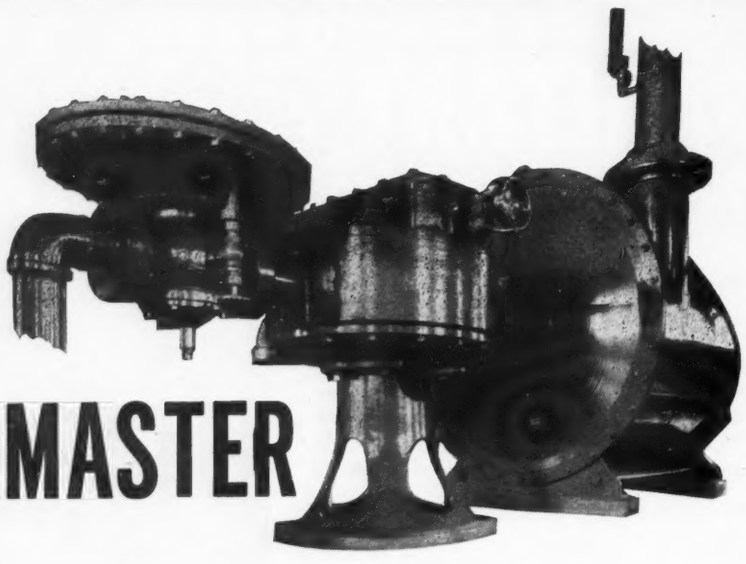
The most extensive and systematic study of the freezing of bread has been done by J. R. Katz[2]. He found that bread staled most rapidly at –2 to –3 deg. C. and that the staling rate decreased when the temperature was lowered as well as when it was raised. Keeping the bread at –185 deg. C. (temperature of liquid air) retarded staling equally as well as keeping it at 60 deg. C.; it was fresh in a physiochemical sense even after 48 hours. At –8 deg. C., the bread was only half stale after 48 hours.

Other investigators, both in the United States and Europe[3,3a], tried temperatures ranging from –1.1 deg. C. to that of solid CO_2. Bread kept at –18 to –20 deg. C. was reported as being the nearest to strictly fresh bread. Those investigators did not report results of any physiochemical test to determine degree of staleness.

L. H. Bailey[5], working with solid CO_2 and keeping the bread in a CO_2 atmosphere, reported –9.4 deg. C. as giving bread nearest to fresh bread when kept at that temperature for three days. However, physiochemical tests showed the bread to be nearly stale. Charles N. Frey and fellow members of the bread staling committee of the New York section of American Association of Cereal Chemists investigated frozen bread. They found it to be partially stale by physiochemical tests although, in an eating test, over 50 per cent of more than 50 judges preferred week-old frozen bread to day-old fresh bread made on same formula.

With the conflicting results reported from these previous investigations to serve both as warnings and as guides in respect to procedures, studies by American Institute of Baking were begun.

Part II of this article, to be published in a forthcoming issue of FOOD INDUSTRIES, *will describe the work on frozen bread by American Institute of Baking and will reveal the results.*



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Air-Conditioning Warehouse

(*Continued from page 71*)

air-conditioned cold storage installation. Probably the most difficult phase of providing refrigerated conditions in the warehouse was that of providing sufficient insulation in the ceilings and walls of an already constructed building to prevent excessive heat infiltration. Furthermore, the interior partition in the building, 600 ft. long, had to be such that it could be removed during peak operations of the warehouse in the fall and winter so as not to impair the efficiency of handling the huge quantities of walnuts involved. Another very serious difficulty was providing refrigeration for an area 600 ft. long, 186 ft. wide, and but 14.4 ft. high to the bottom of the bottom roof chord.

These problems were solved by Paul A. Sherer, refrigeration consultant of San Francisco, who designed and supervised the installation of an air-conditioning system which maintains a temperature of approximately 35 deg. F. uniformly throughout this area. Effective ceiling insulation against the summer sun was provided by the use of lightweight insulating panels fastened to the roof purlins to form a solid insulating medium 4½ in. thick with a 1½ in. air space under the entire roof deck of the conditioned section. These panels were 8 ft. long, 4 ft. wide and 4½ in. thick and were constructed on the job. Each consists of a bottom sheet of ½ in. insulating board on the top side of which are nailed three equally spaced 1x4 in. redwood members. Between these separating strips, shredded redwood bark was placed and held in place at the ends by strings tacked across the ends of the separators. The top of the panel is a sheet of cardboard. Installation was accomplished by raising the panel into position between the two purlins upon which 2x2 supporting members had been nailed. By cutting the string, the bark expanded against the purlins forming a uniform contact throughout the entire roof.

The insulated walls separating the conditioned space from the remainder of the warehouse were constructed of double-walled wooden sections 6 in. thick, filled with shredded redwood bark and bolted between the main columns along the center and across the front end of the building.

The refrigerating machinery is housed in a small addition made at the rear of the building and consists of two Frick 9x9 in. ammonia compressors driven by 75 hp. motors. The liquid ammonia from the refrigerator system passes from the receiver into a horizontal multiple pass brine cooler through which the brine used in the brine film transfer method of air conditioning flows. The ammonia then passes through the compressors into a water-cooled condenser and back into the receiver for recirculation. Water for the compressors and ammonia condensers is cooled by a recirculating water system, with a cooling tower installed on the roof of the compressor room.

Brine chilled in the brine cooler is circulated over the brine film surfaces which extend across the entire width of the air-conditioned space at one end of the structure. This heat transfer surface consists of a series of units approximately 4 ft. long, 4 ft. high, and 4 ft. deep over which a specially woven cloth is passed to form a series of vertical surfaces 2¼ in. apart. The chilled brine flows through the headers along the top of this transfer unit, and downward over the cloth forming a brine film on either side. Brine runs off the bottom of the film supporting surfaces into a brine collecting pan, from which it flows to the

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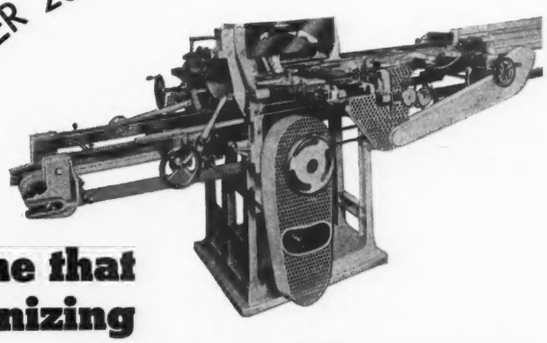

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brine storage tank containing a filter bed and thence to the pumps for recirculation. Space enclosed by the heat transfer unit acts as an intake air plenum chamber for the main blowers which draw air between the vertical brine film surfaces and discharge it into ducts suspended between the roof trusses on the center line of the air-conditioned section of the building. The air is in intimate contact with the brine film surface, the area of which is so proportioned that upon leaving it the air is at the required temperature and humidity, virtually regardless of the heat load on the plant.

Distribution of the air within the warehouse space was another difficult problem. It was overcome by a novel method of airflow control. The central distribution duct, constructed of sheet metal 4 ft. 6 in. in diameter, extends down the center of the 600-ft. air-conditioned section. To equalize the pressures in this duct, supplementary feeders of equal total friction are carried alongside and discharge into it at successively longer intervals. The top and bottom of the main air-conditioning duct is perforated with holes 2.6 in. in diameter. The spacing and number of these orifices is calculated to care for friction and heat transfers so that uniform temperatures exist throughout the entire load. Cold air from the top sweeps across the ceiling, removing by conduction heat transferred through the room. From the bottom, a sweeping action across the floor and up the wall is obtained by placing the return duct system, similarly designed, at approximately ceiling height along each outer wall.

Thus the air passes across the building width on the ceiling and floor and up the outer wall and into the intakes of the return air ducts which terminate in the air plenum where the heat transfer unit is located. The differential in pressure necessary for circulating the air is thus provided by the main blowers which take air from this chamber through the heat transfer unit and discharge it at a total static pressure of $\frac{7}{8}$ in. water gage into the storage space through the central distribution duct. The main storage room is balanced at atmospheric temperature to prevent heavy refrigeration losses when doors are opened.

Temperature of the conditioned air in the building can be varied by variation in the brine temperature. Humidity, within very close limits, is controllable by variations in the concentration of the brine. Humidity is actually controlled in this plant to within 1 per cent in normal operation. For best storage conditions the walnut storage space is kept at 35 deg. F. and approximately 65 per cent relative humidity. This method of air conditioning is probably the only way in which such a large space could have been conditioned economically. The cost of piping and refrigeration equipment for the conventional ammonia piping refrigeration would have been appreciably greater. Furthermore, as both the refrigerating machinery and the air-conditioning ducts occupy otherwise unused space, the normal functioning of the warehouse is no way impaired.

The association has expressed itself as being very well satisfied with the operation of the system which has proved to give equalized temperature and relative humidities throughout the entire volume of the refrigerated space. As both the first cost and the operating cost of the system are low, and as the first two years' saving paid for the complete installation, the cold storage facilities are expected to provide appreciable savings in operations in coming years.

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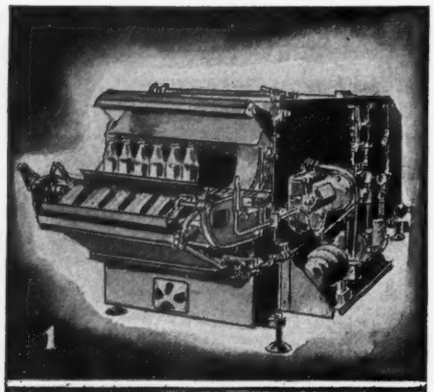
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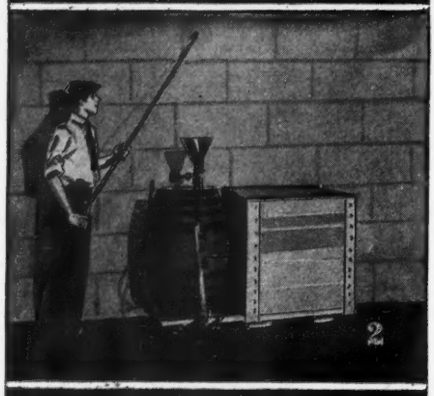
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Plant Tours

(*Continued from page 66*)

refreshments and more enthusiastic distributors.

There is one other important application of the "open house" for visitors, and that is "open house" to the families and friends of employees. Being human we are all alike. We want most to have the folks at home and our friends recognize us as an important part of the scheme of things in an important organization. This pride of employees is raised to the maximum when families and friends visit the plant.

Today we are a well-educated nation; tomorrow we will be better educated. The foundation of our national training is to take little for granted but to seek for and ask for the facts. Our national attitude toward the unknown is typified by "O Yeah?" The time has come for the food industries to answer questions—all questions. Most questions are satisfactorily answered when a visitor tours the plant. For those who have not already done so, the time has come to clean up, paint up, dress up and open the doors to the world.

Standardized Flavor

(*Continued from page 75*)

quired high quality in vegetable juices, the raw materials are carefully selected. Exhaustive laboratory analyses and experimental-plant testing of the many varieties grown under wide geographic differences in climate and soil conditions are necessary if high standards of quality are to be obtained. Then the vegetables are graded, or sorted, and cleaned preparatory to processing.

Of much importance to high quality is the manner of handling the juices in the extracting or pressing operations and also during further treatment. It is essential that the inherent good qualities of the juice be protected through these processing operations. Also important to quality are the procedures followed to get juices uniform and stable in flavor, in seasoning and flavoring strength, in vitamin and mineral-salt content and in natural, or characteristic color.

In selecting the raw materials, the acceptance of the fresh vegetables is dependent upon their meeting sample test requirements. They are tested for freshness and healthy physical condition, normal moisture content, essential-oil strength, naturalness of color or other properties characteristic of good quality in the particular vegetable used.

Starting with a suitable raw material, quality in the finished product is dependent upon the application of food engineering and technology, as involved in the design of the equipment and the operation of the process.

Among the various methods developed for making vegetable juices of standard quality and strength is the Rolle process, covered by U. S. Patent No. 1,978,171, granted Oct. 23, 1934, to John B. Rolle, Chicago, Ill., and used by Vegetable Juices, Inc. This process makes use of distillation and cold extraction, as well as pressing and filtration through cotton fabric, to obtain juices fresh in character, uniform in quality and free from fiber and pulp sediment. No preserving or coloring agents are added.

In the distillation phase of the process, a given weight of thoroughly cleaned and broken-up parts of the particular vegetable is mixed with a definite quantity of sediment-containing juice from the presses and a stable oil such as corn, cottonseed or olive oil. Then the mixture is heated in a still pot, by direct fire, until approxi-

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"Lightnin" Variable Speed Mixers operate from 100 to 1800 R. P. M.

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Vinegar—Wines
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Beer—Distilled Spirits
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Mincemeat—Cod Liver Oil

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MANUFACTURERS OF LIGHTNIN PROPELLER TYPE MIXERS

mately one third of the total liquid content is recovered as distillate in a condensing chamber or still head. This condensate contains the volatile flavor, or essential-oil content, of the vegetable plus water and a sufficient amount of the added oil to stabilize the essential oil or essence of the vegetable.

The temperature to which the contents of the still is heated depends upon the vegetable used, usually ranging from 120 to 220 deg. F. It is carefully maintained at the chosen level sufficiently long to get the one-third of total liquid content of the still pot over as condensate containing from 1 to 2 per cent of the added oil. The distilling temperature must be kept within the prescribed limits, otherwise the condensate will either be too strong or too weak in essential oil or essence and stable oil content, or it will have a disagreeable odor and taste because of the decomposition that is certain to take place at high temperatures.

To a given weight of the fresh, thoroughly cleaned and chopped or crushed vegetable, sufficient quantity of the condensate is added in a ceramic extraction vessel to bring the total essential oil or essence strength to the desired standard. Under a tight seal, the contents of the extraction vessel are kept at approximately 60 deg. F. for 24 hours preliminary to expression in a standard wooden wine press. After all the available juice has been pressed out, it is filtered through several thicknesses of cheese cloth or other fabric material for the removal of fiber or pulp particles likely to cause an obnoxious sediment in the finished juice.

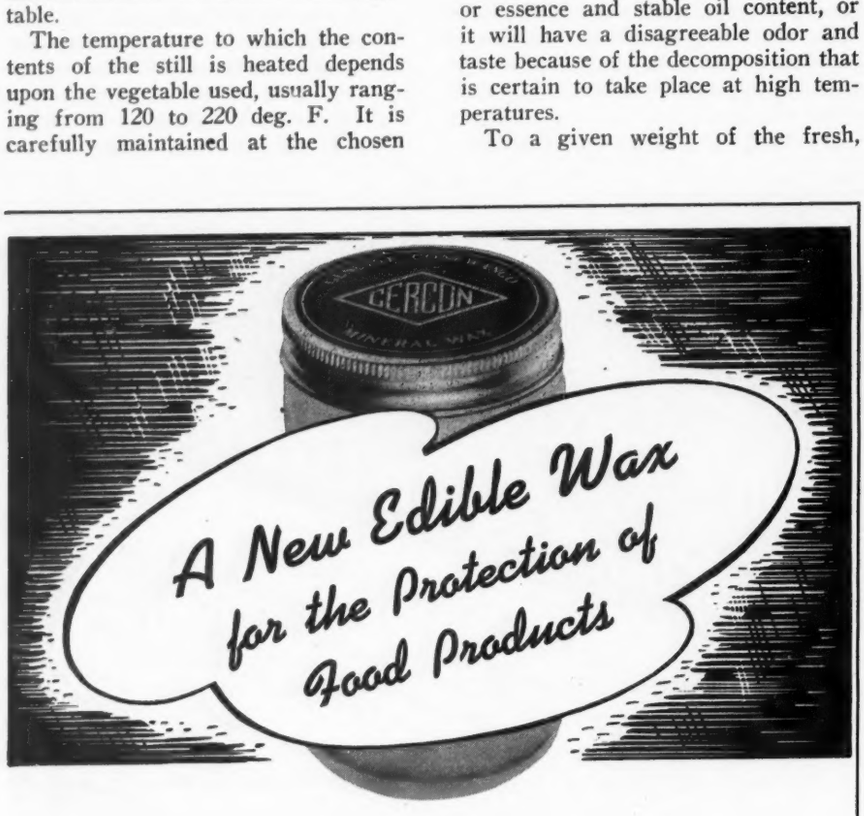
When the details of the process are correctly followed, laboratory tests show that substantially all of the essential oil or essence content of the vegetables, as well as soluble constituents such as mineral salts, are taken out in the juices. The juices have a concentration, as far as the characteristic elements of the vegetables are concerned, of an equal weight of fresh untreated vegetables.

Whereas the fresh untreated vegetables will in a very short time deteriorate in flavor and essential oil or essence strength, the juices remain stable over a considerable period of time. This is particularly true of the onion and garlic juices packaged in glass without any sterilization by heat.

Juices of other vegetables, packaged separately or as blends in cocktail mixtures for direct consumption, are given an extended storage or shelf life through sealing in standard enamel lined cans and retorting under 15 lb. steam pressure for 20 minutes. They are made to an arbitrary standard, based on palatability and other normal characteristics of the highest grade of fresh vegetables.

The garlic, onion, celery and parsley juices for seasoning are twice as strong as the raw materials at their highest potency in essential oil content, and they are self-preserving. These juices are packed and shipped in stoneware jugs and paraffine lined wooden barrels.

The latest herbal vegetable juices to be produced industrially are those of beets, carrots, celery, parsley and spinach, either singly or in mixtures, and with or without the addition of tomato juice to give them a vegetable juice cocktail character. These fresh vegetable juices have been made available for seasoning or direct consumption, not only in a convenient and economic form but also with the elimination of variations caused by differences in variety, soil and climatic conditions and by shipping or storage deterioration.



★ Cercon is an edible, tasteless wax suitable for coating food products requiring protection from the air.

It is supplied in six colors—Snowdrift, Lemon, Orange, Tangerine, Apricot, and Olive. It has an ASTM penetration of 50 with the 50 gram weight attached.

We will be very glad to send test samples to any interested company.

THE CONEWANGO REFINING CO.
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which effect the synthesis are much too versatile to depend on sugar alone. When fed on pyruvic acid, crotonaldehyde or one of several other aldehydes, the yeast proved itself capable of synthesizing fat. In these fermentations without benefit of fermentable sugar, the presence of glycerin was found to be helpful. This is not surprising in view of the fact that the fats are esters of glycerin. Its beneficial effect in forming fats by fermentation is probably responsible for the belief that the yeast actually uses it in the synthesis. Experiments, in which the yeast was given *pure* glycerin alone, produced no fat.

Digest from "Mechanism by Which *Endomyces vernalis* Synthesizes Fats," by L. Reichel, *Oele, Fette, Wachse, Seife, Kosmetik*, p. 6, July, 1938 (Published in Germany).

Saturating Sugar Solutions

THE BARIUM CHLORIDE METHOD cannot be relied upon by itself for ascertaining the optimum point in the second saturation during the refining of sugar. But the method is sufficiently accurate for practical use if a correction for alkalinity is applied. The correction term is 0.5P, where P is the buffer alkalinity to phenolpthalein indicator.

Buffer alkalinity is itself a concept which needs exact attention, and experiment shows that in all probability the conversion of calcium hydroxide to calcium carbonate is not complete at the optimum point in the saturation. It has also been shown that the optimum point coincides with the point of maximum carbonate-ion concentration. This means that the solubility of calcium carbonate is a factor which must be considered in controlling the saturation of sugar solutions. The solubility product of calcium carbonate is a convenient numerical value for use in making calculations. It is about 0.000,000,082.

Digest from "Optimum Point in the Second Saturation, Buffer Alkalinity and the Solubility Product of Calcium Carbonate," by Fritz Wenz, *Deutsche Zuckerindustrie* 63, 748, 1938 (Published in Germany).

MISCELLANEOUS

Pest Control and Poison Hazards

AGRICULTURE'S BATTLE against fungi and insect pests uses great quantities of poisons which would be extremely dangerous to human life if not safeguarded with utmost care. The risk of transmitting poisons to the consumer of fruits, vegetables and cereals is vanishingly small if known precautions are scrupulously observed, but the human factor introduces the possibility of neglect or error. Hence it would be desirable, if possible, to replace all potentially dangerous fungicides and insecticides with products which are nearly or quite non-toxic to man and domestic animals. The arsenicals, such as lead arsenate, stand first in quantity consumption among the poisonous pest control agents, but nicotine, the cyanides, strychnine, thallium compounds and zinc phosphide are also hazardous.

Some progress has been made in replacing arsenic compounds, for example with carbolineum sprays for fruit trees, sulphur compounds for cyanides, fluorides for zinc phosphide and others. The substitute is not always acceptable, as illustrated by the vigorous objections of health authorities to any use of fluorides where they may be transmitted to the consumer.

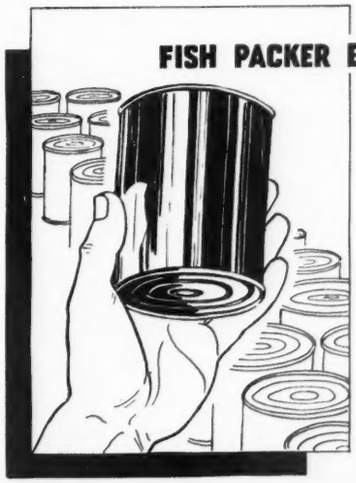
Two more TOUGH Cleaning Problems MADE EASY with Oakite Cleaning

FILTER CLOTHS LEFT Soft-Clean

Washing filter cloths the Oakite way is not only a matter of economy, but it leaves cloths in cleaner, softer condition, restoring their filtering capacity to high efficiency.

Whether it is washing filter cloths, laundering aprons, uniforms or other fabrics, Oakite materials, with their increased wetting-out action and effective, safe detergent power, mean low washing costs, long fabric life, clean, soft work.

FISH PACKER ELIMINATES Spangling



Removing the cottonseed salad oil from tuna fish cans without spangling of the tin, was a problem in one fish packing plant. Charging the can washing machine with an Oakite material especially developed for safely washing tinned surfaces ended the trouble. Cans came through clean, without the slightest trace of any harmful effect upon the tin.

53 different Oakite materials are produced, each for a specific type of cleaning or sterilizing purpose. One or two of them will meet your special requirements. Let us tell you about them. Write. No obligation.

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OAKITE CERTIFIED CLEANING

MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

Among the greatest successes in the use of safe insecticides (whether or not motivated by their non-toxicity to man) has been the development of rotenone products (pyrethrum and derris). Research is still needed to improve their stability and covering power so that they can compete better with nicotine, which is toxic.

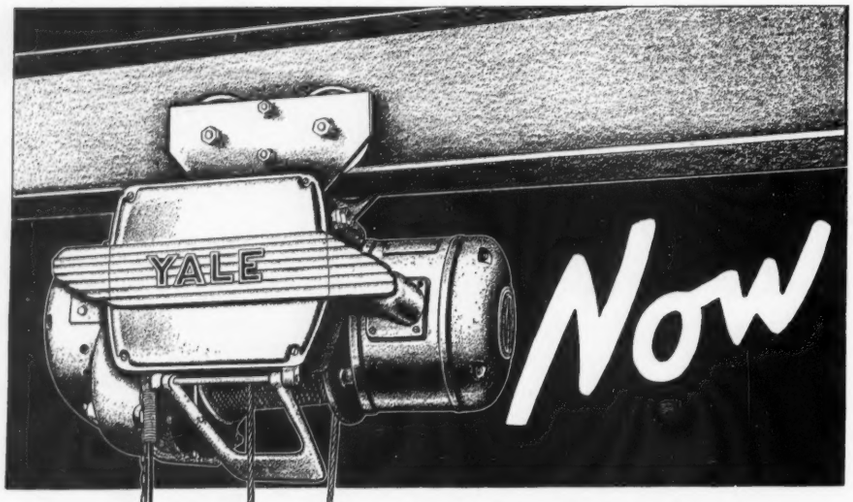
Digest from "Opportunities and Efforts to Substitute Non-toxic for Toxic Horticultural Pest Control Agents," by F. Stellwaag, *Angewandte Chemie* 51, 597, 1938 (Published in Germany).

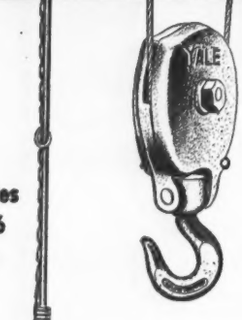
Fluorescence Test for Age of Eggs

THE SHELL of a fresh egg shows a red fluorescence in ultraviolet light. In storage this fluorescence gradually disappears, then finally the shell takes on a blue fluorescence as viewed in ultraviolet light. The rate at which the change occurs depends on the primary intensity of the fluorescence, and this varies a great deal for different hens and even for eggs from the same hen. The test is, therefore, not able to offer any accurate estimate of age in stored eggs, but the age of a given lot can be judged to some extent on the basis of averages. Thus, if an appreciable proportion of the eggs in a given lot of the same age show blue fluorescence, that lot is at least a month old.

Another change which occurs in eggs is the conversion of organically combined phosphorus to a state of inorganic combination, in which state it can be determined as phosphorous pentoxide. The rate of this change varies among different hens, but is nearly constant in eggs from the same hen. Again on the basis of averages, if analysis of the white of any egg reveals more than 0.005 milligrams of phosphorus pentoxide per c.c., that egg is at least a month old.

Digest from "Judging Egg Freshness by Shell Fluorescence and the Phosphate Content of the White," by J. Straub and W. J. Kabos, *Chemisch Weekblad* 35, 739, 1938 (Published in Holland).





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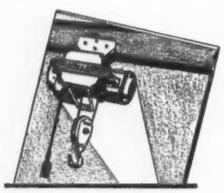
Yale Brings You CABLE KING The Only Electric Hoist That Offers AIR-COOLING

Introduced by Yale just a short time ago, the Cable King with its AIR-COOLING feature is already skyrocketing its way to leadership in the electric hoist field. NOW everybody wants AIR-COOLING!

The reason is simple. AIR-COOLING saves the operator money. The basic limiting factor in electric hoist construction has always been excess brake heat. When Yale engineers adapted the special sirocco blower action that would cool the brake frictional parts they, *for the first time,* made it possible to eliminate this heat.

That's the principle of AIR-COOLING—a principle that permits *the Cable King to operate on a heavier duty cycle than any other hoist in the same class.* And that means *greater economy than any other hoist in the same class!*

In addition, the precision construction of the Cable King makes it the closest approach to perfect engineering specifications that has ever been built. AIR-COOLING plus mechanical perfection—that's what you get in the Cable King. It's the very latest advance in hoisting equipment.



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Biochemical Synthesis

THE COMPLEXITY of the synthetic reactions involved in fermentation may be illustrated by the composition of yeast, as biochemically synthesized from glycerol, ammonium citrate and asparagine in water. Yeast contains carbohydrates, proteins, nucleic acid, fatty acids, phosphatides, phytosterol, vitamins, enzymes, hormones, glutathione and cytochromes. It is cheap and abundant, and so was employed as a suitable test material for investigating the action of ferments.

One of the most important problems in connection with yeast is to control the fermentation in ways which cause the formation of the desired product. There are catalytic influences which promote the exchange of hydrogen atoms and thus give rise to a great variety of oxidation-reduction reactions. In this respect bacterial protoplasm resembles the cells of animal tissue. Numerous products can be made by controlled and directed fermentation, taking advantage of the catalytic effects available in various organisms. Lactic, acetic and butyric acids are among them.

The fact that butyric acid is synthesized quite as readily from glycerin and lactic acid as from sugars suggests that an intermediate compound is formed which is the same no matter what the raw material may be. Acetaldehyde and acetic acid are intermediate in the synthesis of fermentation products.

Digest from "Syntheses By Microorganisms," by Jan Smit, *Chemisch Weekblad* 35, 269, 1938 (Published in Holland).

BOOKS RECEIVED

RANCIDITY IN EDIBLE FATS. By C. H. Lea, Low Temperature Research Station, Cambridge, England. Published by the British Government, 1938. 224 pages; 6x9¾ in.; paper. Price $1.10; obtainable from British Library of Information, 270 Madison Ave., New York, N. Y.

A significant contribution to the scientific information on edible fats and oils is this food investigation report of the British Department of Scientific and Industrial Research. As such, it is of value to food technologists in this country.

Opening with a section on the chemistry of fats, the report takes up, in turn, rancidity (occurrence and types), the lesser causes of rancidity, the action of microorganisms on fats, the deterioration of fats by atmospheric oxidation and rancidity in dairy products and in the fat of meat. The report is indexed, and an extended list of references to literature on the subject is given at the end of each section.

FOOD INDUSTRES MANUAL. Edited by H. B. Cronshaw and G. W. Lacey. Distributed by Chemical Publishing Co. of New York, Inc., 148 Lafayette St., New York, N. Y., 1938. 306 pages; 8¾x11 in.; cloth. Price, $4.

The subject matter for eight separate books is contained in this volume, there being sections on meats, canning, confectionery, dairying, cold storage, packages, cereals and composition of foods, plus a 79-page bibliography. The individual sections are not complete treatises on the subjects which they cover, but they give a brief practical picture of many important factors involved in processing operations in major branches of the food industry. This manual covers British practices, which often differ from those employed in America. And therein perhaps lies a point of value to American technologists, as some of the differences may suggest new methods.

UTILIZATION OF FATS. By H. K. Dean, Published by Chemical Publishing Co. of New York, Inc., 148 Lafayette St., New York, N. Y., 1938. 304 pages; 5½x8½ in.; cloth. Price, $4.

In the past ten years there has been important progress in the technology of fats, and in this book the new knowledge is summarized. Developments in refining and continuous methods are among the advances.

Aside from presenting the latest knowledge, the author approaches the subject from a new angle. He replaces the usual tables of iodine, saponification and other average values and the classification based upon them by tables showing the composition of fats in terms of fatty acids, and where possible, glycerides. This is done for the purpose of presenting a clearer picture of the relation of the structure of fats to their utilization.

The various chapters of the book cover constituents and properties of fats, analytical methods, classification, composition, analysis, artificial fats, extraction and refining, edible fats, paint and varnish oils, soap and fatty acids, and miscellaneous applications.

SUGAR ECONOMICS, STATISTICS AND DOCUMENTS. By Myer Lynsky. Published by United States Cane Sugar Refiners' Association, 136 Front St., New York, N. Y. 305 pages; 6½x9 in.; cloth. Price, $1.50.

This book is particularly timely in view of the current interest in the international sugar situation and the attempts to revise the Cuban sugar tariff. It is a handbook of all phases of the cane and beet sugar industry, including growing, processing and refining in continental United States, Hawaii, Puerto Rico, the Philippines and Cuba. The work is a compilation of sugar statistics and documents from 160 sources. The material is largely that issued by government agencies during the past decade, although information from private sources is also included. In addition to important government papers, laws and administrative interpretations, the book contains information on the capital and earnings of all sugar companies.

Representing as it does a birdseye picture of the sugar industry and of the many factors affecting it, the book will be particularly useful as a tool for public relations work in the industry.

FOOD TABLES. By V. H. Mottram and Ellen M. Radloff. Published by Edward Arnold & Co., London, England, 1937. 63 pages; 5½x8½ in.; boards. Price, $2.

This book is intended to supply dietitians with authoritative tables on the composition of the most used British foodstuffs. The same foods, of course, are used in this and other countries.

MARKET DISEASES OF FRUITS AND VEGETABLES: Crucifers and Cucurbits. By Glen B. Ramsey, James S. Wiant and George K. K. Link. Published by United States Department of Agriculture, 1938. Miscellaneous Publication No. 292. 74 pages; 5⅞x9⅛ in.; paper. Price, 45 cents; for sale by Superintendent of Documents, Washington, D. C.

Twenty-three plates, some of which are in color, illustrate the effects of vegetable diseases. These effectively supplement the description in the text to make more easy the recognition and identification of those pathological conditions of economic importance which affect the products in the channels of marketing. Such knowledge will facilitate market inspection and aid in reducing or preventing losses from such conditions. Incidentally, the vegetables referred to include all of the cabbage family, turnips, horseradish, cucumbers, melons, pumpkins, squash and similar products.

SUGGESTED OUTLINE FOR SPECIFICATIONS FOR PURCHASING CANNED FRUITS AND VEGETABLES. Prepared by Paul Williams, Department of Agriculture. Published by The Consumers' Project, Department of Labor, Washington, D.C., 1938. 21 pages; 8x10½ in.; paper.

Suggestions enabling a purchasing agency, such as a consumers' cooperative, to prepare a detailed description of canned products ordered, are contained in this mimeographed booklet. The quality specifications are based upon the Bureau of Agricultural Economics A, B, C grades (fancy, extra standard, standard). The booklet also covers submission of samples, deliveries, inspection, guarantee, delays and damage, payments, reservations and discounts. Canners from whom products are ordered on the basis of these suggestions should be equipped with a copy of the booklet.

REFERENCE BOOK OF THE MEAT PACKING INDUSTRY. Published by Institute of American Meat Packers, 59 East Van Buren St., Chicago, Ill. 1938. 64 pages; 5½x8 in.; paper.

The latest available figures and other economic information on the meat packing industry are contained in this reference work. It will be of value to students of the industry and to those engaged in public and industrial relations work.

PATENTS

Fruit Given Preliminary Heating by Contact With Steam With Removal of Portion of Condensed Steam Prior to Freeing of Vegetable Juices and Subsequently Continuing the Steam Heating and Cooking to Give Cooked Product of Desired Moisture Content—William A. Smith, Lyndonville, N. Y. No. 2,135,629. Nov. 8, 1938.

Peas and Beans Soaked in Weak Water Solution of Acetic Acid to a Softened Condition, Drained, and Par-Boiled in Water to Which Has Been Added Weak Acetic Acid and an Acid-Fast Caramel Solution—Charles H. Stocking, Ann Arbor, Mich. No. 2,135,646. Nov. 8, 1938.

Cocoa Beans, Coffee, and the Like Freed From Shell and Chaff Material by Electrostatic Action—Herbert B. Johnson to Ritter Products Corp., Rochester, N. Y. No. 2,135,716. Nov. 8, 1938.

Confection Made up of Two Separate Edible Containers of Different Sizes, One of Which Contains Mass of Frozen Confection to Which is Inserted the Smaller Container Containing Unfrozen Flavoring Material—Joseph Bernard Friedman, San Francisco, Calif. No. 2,135,808. Nov. 8, 1938.

Coffee in Ground, Roasted State Packed in Container in Atmosphere of Alcoholic Vapors—John A. Spencer, Newtonville, Mass. No. 2,135,856. Nov. 8, 1938.

Milk Bottle Made From Paper Essentially Pyramid in Shape With Extension of Two Body Sides Forming a Closure and the Extension of the Two Remaining Sides Forming a Handle—Herald T. Snyder, one-half to Henry H. Judson, Seattle, Wash. No. 2,135,855. Nov. 8, 1938.

Vegetable Oils Deodorized by Steam Treatment at Less Than Atmospheric Pressure in a Two-Step Method—Joseph Stewart, Elmhurst, N. Y. No. 2,136,029. Nov. 8, 1938.

Foods Assembled and Molded Into Desired Form for Freezing by Direct Contact With Refrigerant on Top and Bottom Surfaces—Chester J. Conn, Smithtown Branch, N. Y. No. 2,136,041. Nov. 8, 1938.

Sausage of Wiener or Frankfurter Type Cased in Cellulose Having Rupturing Perforation Formed After Sausage Has Been Smoked and Cooked—Lillian M. Kern, Portland, Maine, to Sidney H. Rabinowitz, Brookline, Mass. No. 2,136,106. Nov. 8, 1938.

Coffee Roasted to a Pre-Determined Chlorogenic Acid Content and Subjected to an Aging or Ripening Treatment to Improve Keeping Qualities—Max Specht, Hamburg, Germany. No. 2,136,154. Nov. 8, 1938.

Lecithin and Derivatives of Fatty Acids Added to Compressed Yeast to Reduce Crumbliness and to Improve Color—Alfred S. Schultz, New York and Charles N. Frey, Scarsdale, N. Y., to Standard Brands Inc., New York, N. Y. No. 2,136,399. Nov. 15, 1938.

Hearth-Bread Loaves Kneaded and Molded by Mechanical Means—Charles S. Brykezynski and John Kosman, Brooklyn, N. Y., to George F. Stuhmer & Co., New York, N. Y. No. 2,136,487. Nov. 15, 1938.

Cocoa-Milk Powder Made to Contain Small Percentage of Added Calcium Oxide or Magnesium Oxide as a Deflocculating Agent—Ernest D. Fear, to DeRaef Corp., Kansas City, Mo. No. 2,136,651. Nov. 15, 1938.

Soya Oil Hydrogenated so as to Give Margarine Made From it the Characteristics of Dairy Butter—Harold E. Moore and Ralph B. Vogel, to Capital City Products Co., Columbus, Ohio. No. 2,136,653. Nov. 15, 1938.

Beer Wort Fermented in Closed Chambers Having a Horizontal Ceiling With an Opening Through Which Foam is Pushed During Fermentation Upon Which is Largely Retained the Bitter Sediment Upon Subsidence of Gas Formation at End of Fermenting Period—Rudolf Gull, Affton, Mo., to Anheuser-Busch Inc., St. Louis, Mo. No. 2,136,685. Nov. 15, 1938.

Grinding Operations in Tube or Ball Mills Automatically Controlled by an Electric Ear Device—Carl Frederik Love Roder, Copenhagen, Denmark to F. L. Smidth & Co., New York, N. Y. No. 2,136,907. Nov. 15, 1938.

Fermentation Tolerance of Bakery Dough Increased by the Addition of a Conditioner in Which the Strength of the Amylolytic Enzyme Content Has Been Increased Without Increasing the Activity of the Proteoclastic Enzyme Content—Alfred Pollak, Woodmere, N. Y. No. 2,137,027. Nov. 15, 1938.

Whole Cereal Grains Steeped in Wet Brewers' Grains and Distillery Slop Preparatory to Sprouting and Malting—Robert L. Lindsey to Benjamin S. Lindsey, Terre Haute, Ind. No. 2,137,141. Nov. 15, 1938.

Fresh Fruit and Vegetable Material Preserved Without Loss of Juice by Being Intimately Mixed with Particles of Non-Acid Pectin in a Non-Hydrated, Non-Gelatinous Condition, Packed in Containers and Frozen—William W. Cowgill, Fairfield, Conn., to Sardik Inc., Jersey City, N. J. No. 2,137,205. Nov. 15, 1938.

Dried Figs Bleached by Oxidizing Action of Hydrogen Peroxide Solution—Carl F. Love, to California Prune & Apricot Growers Assn., San Jose, Calif. Reissue No. 20,923. Nov. 22, 1938.

Chocolate Paste Conched in a Continuous Production Manner—Wallace T. Jones and Leonard Dotzer to Rockwood & Co., Brooklyn, N. Y. No. 2,137,294. Nov. 22, 1938.

Tea Leaves Sprayed to Receive Uniform Treatment With Terpene-Free Oils of Orange and Lemon—Leonard Morton Wright, Dunedin, New Zealand. No. 2,137,374. Nov. 22, 1938.

Citrus Fruit Juices Freed From the Fruit Tissues by Mechanical Batting of the Fruit Masses—Ralph Polk, Sr., Miami, and Ralph Polk, Jr., Haines City, Fla. No. 2,137,414. Nov. 22, 1938.

Chewing Gum Material Containing a Paraffin Wax With a Melting Point of at Least 160 Deg. F.—Robert L. Wilson to Wm. Wrigley, Jr. Co., Chicago, Ill. No. 2,137,746. Nov. 22, 1938.

Fresh Egg Meats Preserved by the Addition of a Small Amount of Papain to Egg Mixed with Small Amount of Sugar and Deaeration Prior to Sterilization—Herman Heuser, Evanston, Ill. No. 2,137,758. Nov. 22, 1938.

Meat Sharp Frozen, Sliced with a Knife-Edge Cutter, Reassembled and Again Frozen to Temperature of 0 Deg. F. or Lower—Harry H. McKee and Floyd Seaver, to Swift & Co., Chicago, Ill. No. 2,137,897. Nov. 22, 1938.

Hams Heated and Smoked in Temperature of 190 to 195 Deg. F. Until Inside Temperature Reaches 125 Deg. F. and Held at 160 to 165 Deg. F. Until Thoroughly Cooked—Harry H. McKee to Industrial Patents Corp., Chicago, Ill. No. 2,137,898. Nov. 22, 1938.

Cream Given Improved Whipping Properties Through the Addition of Small Amount of Glyceryl Ester of a Higher Fatty Acid Having a Free Glyceryl Alcohol Group—Guy W. Phelps, Raymond Bradley and Donald C. Pierie to Industrial Patents Corp., Chicago, Ill. No. 2,137,899. Nov. 22, 1938.

Poultry Quick-Frozen by Submerging in Liquified Refrigerant in a Closed System Under Pressure—Charles T. Walter to Industrial Patents Corp., Chicago, Ill. No. 2,137,902. Nov. 22, 1938.

Whipping Cream Treated With a Sodium Alginate—Alex Kleerup, Flushing, N. Y., to Kelco Co., San Diego, Calif. No. 2,137,916. Nov. 22, 1938.

Starch Conversion Products Made by Treating Mill-House Starch With Hydrochloric Acid of 12 to 15 Min. With Steam Under 25 to 35 lb. Pressure and Subsequent Neutralization to Isoelectric Point to Coagulate Proteins—Raymond E. Daly and James F. Walsh, Chicago, to American Maize-Products Co., Chicago, Ill. No. 2,137,973. Nov. 22, 1938.

Baking Powder Made by Mixing Bicarbonate of Soda and Acid Calcium Tetraphosphate—Augustus H. Fisk, Warren, R. I., to Rumford Chemical Works, Rumford, R. I. No. 2,138,029. Nov. 29, 1938.

Wheat Flour Bleached by the Addition of From 5 to 15 Per Cent by Weight of a Water Extract of Soy Beans and Other Legumes—Harry Hewitt, Manchester, England, to Standard Brands Inc., New York, N. Y. No. 2,138,062. Nov. 29, 1938.

Pies Baked in Covered Metal Pans Attached to a Continuous Conveyor and Closed to Reduce Loss of Original Moisture and Prevent Boiling Out of Juices—Martin Tatosian, Chicago, Ill. No. 2,138,247. Nov. 29, 1938.

Frankfurters and Similar Meat Products in Casings Compressed Into Link Lengths by Mechanical Means—Frank W. Trabold, Detroit, Mich. No. 2,138,260. Nov. 29, 1938.

Milk Pasteurized in a System Which Permits Continuous Flow of Heated Liquid Through Tubes Arranged Tangentially so That Liquid Admitted at One End Flows Helically Around an Inner Tube and Out on a Predetermined Volume of Flow Basis—Benjamin E. Getchell to The Trumbull Electric Mfg. Co., Plainville, Conn. No. 2,138,402. Nov. 29, 1938.

Yeast Freed of Its Characteristic Taste and Odor by Hydrogenating in Water Suspension in the Presence of a Catalyst—Charles A. Thomas and Carroll A. Hochwalt, Dayton, Ohio, to Monsanto Chemical Co., St. Louis, Mo. No. 2,138,434. Nov. 29, 1938.

Yeast-Fermented Beverages Freed From "Green" or Yeasty Taste and Odor by Treatment With Hydrogen Gas in the Presence of a Catalyst—Charles A. Thomas and Carroll A. Hochwalt, Dayton, Ohio, to Monsanto Chemical Co., St. Louis, Mo. No. 2,138,435. Nov. 29, 1938.

Sausages and Similar Finely Divided Food Products Cased in a Moisture Permeable Flexible Tubing Creased Lengthwise and Sealed by an Edible Water Soluble Adhesive—Frank W. Trabold, Detroit, Mich. No. 2,138,462. Nov. 29, 1938.

Bread Mechanically Crumbed by a Rotatable Disk Machine—Shelly Truitt, to John Marion Seney, Baltimore, Md. No. 2,138,716. Nov. 29, 1938.

Egg Meat Mixture Comprised of Slightly More Than 46 Per Cent Yolks, 43 Per Cent Whites and One Per Cent Sodium Chloride and About 9 Per Cent Sugar—Raymond D. Gerwe, Cincinnati, Ohio. No. 2,138,737. Nov. 29, 1938.

Sausage and Similar Meat Products Made in a Mixer With a Tiltable Bowl or Tub Operated by Hydraulically Actuated Pistons—Adrian C. Van Hooydonk to John E. Smith's Sons Co., Buffalo, N. Y. No. 2,138,798. Nov. 29, 1938.

Chewing Gum Made to Contain Activated Carbon as an Active Ingredient—Clarence H. Flint, Westport, Conn., to Peter Paul, Inc., Naugatuck, Conn. No. 2,138,804. Nov. 29, 1938.

Milk, Beer and the Like Sterilized by Pumping Under Pressure Through a Closed Chamber Agitated With Audible Compressionable Vibrations—Leslie A. Chambers, Brookline, Mass., to William H. Ashton, Edgemont, Pa. No. 2,138,839. Dec. 6, 1938.

Nuts Cracked by an Automatic Mechanical Means—Henry F. Ruggles, Louisville, Ky. No. 2,138,942. Dec. 6, 1938.

Coffee-Chocolate Syrup Concentrate Deaerated and Sealed in Cans Under Carbon Dioxide Pressure—Elizabeth C. Forbes, Baltimore, Md. No 2,139,304. Dec. 6, 1938.

Beverages Fermented Under a Greater Than Atmosphere Pressure to Aid Recovery of Bulk of Yeast in Pure Form—Herman Heuser, Evanston, Ill. No. 2,139,408. Dec. 6, 1938.

Liquids Irradiated by Exposure to Source of Ultra-Violet Energy While Flowing Over Surfaces Fitted With a Plurality of Baffles—Walter Baeck.er, Lockwood, Ohio, to Union Carbide and Carbon Corp., New York, N. Y. Nos. 2,139,656 and 2,139,657. Dec. 13, 1938.